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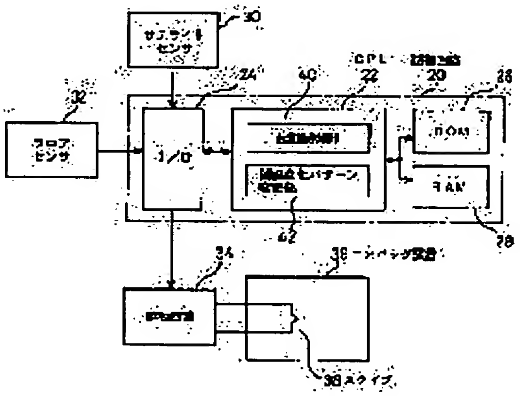
(54) STARTING CONTROL DEVICE FOR OCCUPANT CRASH PROTECTION

(57)Abstract:

PROBLEM TO BE SOLVED: To reliably start an occupant crash protection by a method wherein a sock measuring means is disposed in a given position in a vehicle, a shock exerted on the vehicle is measured, a value obtained based on measurements is compared with a threshold changed according to a given change pattern by a starting control means, and based on a comparing result, starting is controlled.
SOLUTION: A satellite sensor 30 outputs an ON-signal when deceleration exceeding a given reference value is applied on a vehicle. A floor sensor 32 measures deceleration longitudinally exerted on the vehicle upon occasion and outputs the measurements as a signal. A central computing unit 22 is functioned as a starting control part 40 to compare a value, obtained based in a detecting result from the floor sensor 32, with a given threshold to control the starting of an air bag device 36, and a threshold change pattern varying part 42 to vary a change pattern classified by the change pattern of a threshold when it is detected by the satellite sensor 30 that a shock exceeding a given reference value is exerted. This constitution performs starting control without being influenced by a kind of an object of crash.



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CLAIMS

[Claim(s)]
[Claim 1] An impact measurement means to measure the impact which is a starting control unit for controlling starting of the occupant crash protection carried in the car, is arranged in the position in said car, and joins this car, The starting control means which compares the value acquired based on the measured value by this impact measurement means with the threshold which changes according to a predetermined change pattern, and controls starting of said occupant crash protection based on the comparison result, An impact detection means to detect whether it was ahead arranged rather than said impact measurement means in said car, and the impact beyond a predetermined reference value joined said car, The starting control unit of the occupant crash protection equipped with a threshold change pattern modification means to change the change pattern of said threshold into another change pattern when it is detected that the impact beyond said reference value was added with this impact detection means.
[Claim 2] In the starting control unit of occupant crash protection according to claim 1, the value from which plurality differs as said reference value is prepared. Said impact detection means It has two or more detection means to detect, respectively whether the impact beyond this corresponding reference value joined said car while corresponding to each reference value, respectively. Said threshold change pattern modification means The starting control unit of the occupant crash protection characterized by changing the change pattern of said threshold into another pattern with the detection means corresponding to a desired reference value among said two or more detection means when it is detected that the impact beyond this reference value was added.
[Claim 3] An impact measurement means to measure the impact which is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, is arranged in the position in said car, and joins this car, The starting control means which compares with a predetermined threshold the value acquired based on the measured value by this impact measurement means, and controls starting of said occupant crash protection based on the comparison result, An impact detection means to detect whether it was ahead arranged rather than said impact measurement means in said car, and the impact beyond a predetermined reference value joined said car, The starting control unit of the occupant crash protection equipped with a threshold modification means to change said threshold into another value when it is detected that the impact beyond said reference value was added with this impact detection means.
[Claim 4] In the starting control unit of occupant crash protection according to claim 3, the value from which plurality differs as said reference value is prepared. Said impact detection means It has two or more detection means to detect, respectively whether the impact beyond this corresponding reference value joined said car while corresponding to each reference value, respectively. Said threshold modification means The starting control unit of the occupant crash protection characterized by changing said threshold into another value with the detection means corresponding to a desired reference value among said two or more detection means when it is detected that the impact beyond this reference value was added.
[Claim 5] It is the starting control unit of the occupant crash protection characterized by being set as a bigger value than the value of the impact detected in the arrangement location of said impact detection means when the impact of extent which does not need to start said occupant crash protection on said car is added by collision according [on the starting control unit of occupant crash protection according to claim 1 or 3, and / said reference value] to a predetermined collision gestalt.
[Claim 6] The transfer path which is the starting control unit of occupant crash protection according to claim 1 or 3, and transmits the detection result by said impact detection means from this impact detection means to said starting judging means is the starting control unit of the occupant crash protection characterized by two

or more paths of a certain thing into said car.
[Claim 7] It is the starting control unit of the occupant crash protection characterized by being the starting control unit of occupant crash protection according to claim 1 or 3, and arranging two or more places of said impact detection means in said car.
[Claim 8] It is the starting control unit of occupant crash protection according to claim 1 or 3. Said impact detection means It is arranged ahead [of said impact measurement means / the right slanting front and ahead / left slanting] in said car, respectively. The transfer path which transmits the detection result by each impact detection means from each impact detection means to said starting judging means is the starting control unit of the occupant crash protection characterized by there being a path passing through the right-hand side in said car and a path passing through the left-hand side in said car for every impact detection means, respectively.
[Claim 9] An impact measurement means to measure the impact which is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, is arranged in the position in said car, and joins this car, The starting control means which compares the value acquired based on the measured value by this impact measurement means with the threshold which changes according to a predetermined change pattern, and controls starting of said occupant crash protection based on the comparison result, When in agreement with the direction where said direction of an impact detected by direction detection means of an impact to detect the direction of the impact which joins said car, and this direction detection means of an impact was set up beforehand The starting control unit of occupant crash protection equipped with a threshold change pattern modification means to change the change pattern of said threshold into another change pattern.
[Claim 10] An impact measurement means to measure the impact which is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, is arranged in the position in said car, and joins this car, The starting control means which compares with a predetermined threshold the value acquired based on the measured value by this impact measurement means, and controls starting of said occupant crash protection based on the comparison result, The starting control unit of the occupant crash protection equipped with a threshold modification means to change said threshold into another value when in agreement with the direction where the direction detected by direction detection means of an impact to detect the direction of the impact which joins said car, and this direction detection means of an impact was set up beforehand.
[Claim 11] It is the starting control unit of the occupant crash protection characterized by detecting said direction of an impact from the measured value of the impact which joins the cross direction of said car are the starting control unit of occupant crash protection according to claim 9 or 10, and according [said direction detection means of an impact] to said impact measurement means, and the value acquired based on the measured value of the impact which joins a longitudinal direction.
[Claim 12] An impact measurement means to measure the impact which is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, is arranged in the position in said car, and joins this car, The starting control means which compares the value acquired based on the measured value by this impact measurement means with the threshold which changes according to a predetermined change pattern, and controls starting of said occupant crash protection based on the comparison result, A collision gestalt distinction means to distinguish the collision gestalt at the time of said car colliding, and a taking-a-seat condition detection means to detect crew's taking-a-seat condition in said car, It is the collision gestalt as which said collision gestalt distinguished by said collision gestalt distinction means was determined beforehand. And the starting control unit of the occupant crash protection equipped with a threshold change pattern modification means to change the change pattern of said threshold into another change pattern when said taking-a-seat condition detected by said taking-a-seat condition detection means is in the taking-a-seat condition defined beforehand.
[Claim 13] An impact measurement means to measure the impact which is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, is arranged in the position in said car, and joins this car, The starting control means which compares with a predetermined threshold the value acquired based on the measured value by this impact measurement means, and controls starting of said occupant crash protection based on the comparison result, A collision gestalt distinction means to distinguish the collision gestalt at the time of said car colliding, and a taking-a-seat condition detection means to detect crew's taking-a-seat condition in said car, It is the collision gestalt as which said collision gestalt distinguished by said collision gestalt distinction means was determined beforehand. And the starting control unit of the occupant crash protection equipped with a threshold

modification means to change said threshold into another value when said taking-a-seat condition detected by said taking-a-seat condition detection means is in the taking-a-seat condition defined beforehand.
[Claim 14] An impact measurement means to measure the impact which is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, is arranged in the position in said car, and joins this car, A speed detection means to detect the rate of the supposed body if not fixed in said car, The starting control unit of occupant crash protection equipped with the starting control means which draws the change to said rate detected by said speed detection means of the value acquired based on the measured value by said impact measurement means, and controls starting of said occupant crash protection based on the derivation result.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the starting control unit for controlling starting of such occupant crash protection especially with respect to occupant crash protection, such as air bag equipment which takes care of the crew in a car, when a car collides.
[0002]
[Description of the Prior Art] As equipment which controls starting of occupant crash protection, there is equipment which controls the ignition of Squibb in air bag equipment, for example. With air bag equipment, a generation-of-gas agent is lit by Squibb into an inflator, gas was generated, by the gas, the bag was blown up and crew is protected from the inflator.
[0003] With the equipment which controls ignition of Squibb of such air bag equipment, an acceleration sensor usually detects as deceleration the impact which joins a car, an operation value is calculated based on the detected deceleration, the size comparison of the operation value is carried out with the threshold set up beforehand, and ignition control of Squibb is performed based on the comparison result. By the former, one acceleration sensor is arranged in the car and is usually attached on the floor tunnel in a car. Hereafter, the acceleration sensor attached on such a floor tunnel is called floor sensor.
[0004] Moreover, the above-mentioned threshold is set as the bigger value among the operation values acquired based on the deceleration detected by the floor sensor than the greatest value, when the impact of extent which does not need to start air bag equipment joins a car.
[0005]
[Problem(s) to be Solved by the Invention] As mentioned above, in the starting control unit of the occupant crash protection in the former, the impact which joins a car was detected and starting of occupant crash protection was controlled only by the floor sensor based on the detection result. For this reason, there were the following troubles in the former.
[0006] Generally, the collision gestalt of a car is classified into right **, ****, a pole collision, offset collision, an undershirt RAIDO collision, etc. according to the method of a collision, the direction of a collision, the class of collision object, etc., as shown in drawing 27 . Among these, in the case of right **, in order that a car may get an impact by collision by two right-and-left side members, great deceleration arises on the floor tunnel in which the floor sensor is attached in the predetermined time after a collision, but in order not to adopt how to get such an impact in the case of the collision of those other than right **, on a floor tunnel, so big deceleration is not produced in the predetermined time after a collision.
[0007] Therefore, in right **, a floor sensor tends [comparatively] to detect an impact in the predetermined time after a collision, but in the collision of those other than right **, an impact cannot be detected easily.
[0008] For this reason, the above-mentioned threshold is set up mainly based on the deceleration detected in the case of right **. That is, a threshold is set up based on the operation value acquired from the deceleration detected by the floor sensor, when the impact of extent which does not need to start air bag equipment joins a car by right **.
[0009] However, if a threshold is set up in this way based on the deceleration detected in the case of right **, the threshold itself will turn into a comparatively big value. On the other hand, as described above in the collision of those other than right **, since a floor sensor cannot detect an impact easily in the predetermined time after a collision, by carrying out the Fourier transform of the decelerating signal acquired on the occasion of a collision using DSP (digital signal processor), it needs to detect the description of a specific frequency component and needs to detect the collisions of those other than right ** (offset collision etc.). Since equipments, such as DSP, need to use the high computer of a throughput required to

start, there is a problem that cost will start.
[0010] Therefore, the object of this invention solves the trouble of the above-mentioned conventional technique, and does not depend it on the collision gestalt of a car, but is to offer the starting control unit of the occupant crash protection which can start occupant crash protection certainly with an easy configuration.

[0011]
[The means for solving a technical problem, and its operation and effectiveness] In order to attain a part of above-mentioned object [at least], the 1st invention An impact measurement means to measure the impact which is a starting control unit for controlling starting of the occupant crash protection carried in the car, is arranged in the position in said car, and joins this car, The starting control means which compares the value acquired based on the measured value by this impact measurement means with the threshold which changes according to a predetermined change pattern, and controls starting of said occupant crash protection based on the comparison result, An impact detection means to detect whether it was ahead arranged rather than said impact measurement means in said car, and the impact beyond a predetermined reference value joined said car, When it is detected that the impact beyond said reference value was added with this impact detection means, let it be a summary to have a threshold change pattern modification means to change the change pattern of said threshold into another change pattern.
[0012] Thus, an impact measurement means is arranged in the position in said car, measures the impact which joins this car, and a starting control means compares the value acquired based on the measured value by the impact measurement means with the threshold which changes according to a predetermined change pattern, and it controls starting of said occupant crash protection by 1st invention based on the comparison result. On the other hand, a collision-detection means is ahead arranged rather than said impact measurement means in said car, and detects whether the impact beyond a predetermined reference value joined said car. And a threshold change pattern modification means changes the change pattern of said threshold into another pattern, when it is detected that the impact beyond said reference value was added with the impact detection means.
[0013] In addition, in the 1st invention, the equipment which stops the fuel supply to an engine at the time of a collision besides being for example, air bag equipment, seat belt equipment with pretensioner, inflator pull curtain equipment, etc., the equipment of which a door lock is canceled at the time of a collision are contained in "occupant crash protection." moreover -- the value acquired the measured value of an impact, and based on the measured value -- for example, acceleration (deceleration is included), a rate, a travel (namely, value which integrates with deceleration twice about time amount, and is acquired), the moving average (namely, value acquired by carrying out fixed time quadrature of the deceleration), etc. -- others -- the synthetic component showing the reinforcement of a specific decelerating frequency, the deceleration of the cross direction of a car and a longitudinal direction, etc. of a vector etc. is contained. About these, it is the same also in other invention described below.
[0014] Even if the collision gestalt of a car is a collision gestalt which cannot detect an impact easily depending on an impact measurement means, when an impact detection means detects that the impact beyond a reference value joined the car according to the 1st invention, the change pattern of said threshold is changed into another change pattern by the threshold change pattern modification means. Consequently, supposing it is changed into a change pattern with which the change pattern of a threshold serves as a value lower than the threshold till then When an impact with the need of starting occupant crash protection by collision joins a car in the predetermined within a time one after a collision, since the value acquired based on the measured value of an impact can exceed the above-mentioned threshold, even if it is the collision gestalt which cannot detect an impact easily depending on an impact measurement means, occupant crash protection can be certainly started with an easy configuration.
[0015] In the starting control unit of the 1st invention, the value from which plurality differs as said reference value is prepared. Moreover, said impact detection means It has two or more detection means to detect, respectively whether the impact beyond this corresponding reference value joined said car while corresponding to each reference value, respectively. Said threshold change pattern modification means Among said two or more detection means, when it is detected that the impact beyond this reference value was added with the detection means corresponding to a desired reference value, it is desirable to change the change pattern of said threshold into another pattern.
[0016] Thus, since the change pattern of a threshold can be changed when the impact beyond the reference value of the request in two or more reference values is added by constituting, starting of occupant crash protection can be controlled according to various situations.

[0017] An impact measurement means to measure the impact which the 2nd invention is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, and is arranged in the position in said car, and joins this car, The starting control means which compares with a predetermined threshold the value acquired based on the measured value by this impact measurement means, and controls starting of said occupant crash protection based on the comparison result, An impact detection means to detect whether it was ahead arranged rather than said impact measurement means in said car, and the impact beyond a predetermined reference value joined said car, When it is detected that the impact beyond said reference value was added with this impact detection means, let it be a summary to have a threshold modification means to change said threshold into another value.
[0018] Thus, an impact measurement means is arranged in the position in said car, measures the impact which joins this car, and a starting control means compares with a predetermined threshold the value acquired based on the measured value by the impact measurement means, and it controls starting of said occupant crash protection by 2nd invention based on the comparison result. On the other hand, a collision-detection means is ahead arranged rather than said impact measurement means in said car, and detects whether the impact beyond a predetermined reference value joined said car. And a threshold modification means changes said threshold into another value, when it is detected that the impact beyond said reference value was added with the impact detection means.
[0019] Therefore, even if the collision gestalt of a car is a collision gestalt which cannot detect an impact easily depending on an impact measurement means, when an impact detection means detects that the impact beyond a reference value joined the car according to the 2nd invention, said threshold is changed into another value, for example, a value lower than the value till then, by the threshold modification means. for this reason, since the value acquired based on the measured value of an impact can exceed the above-mentioned threshold in the predetermined within a time one after a collision when an impact with the need of starting occupant crash protection by collision joins a car, even if it is the collision gestalt which cannot detect an impact easily depending on an impact measurement means, occupant crash protection can be certainly started with an easy configuration.
[0020] Moreover, it sets to the starting control unit of the 2nd invention. The value from which plurality differs as said reference value is prepared. Said impact detection means It has two or more detection means to detect, respectively whether the impact beyond this corresponding reference value joined said car while corresponding to each reference value, respectively. Said threshold modification means Among said two or more detection means, when it is detected that the impact beyond this reference value was added with the detection means corresponding to a desired reference value, it is desirable to change said threshold into another value.
[0021] Thus, since a threshold can be changed when the impact beyond the reference value of the request in two or more reference values is added by constituting, starting of occupant crash protection can be controlled according to various situations.
[0022] Moreover, in the 1st or the starting control unit of the 2nd invention, when the impact of extent which does not need to start said occupant crash protection joins said car by the collision by the predetermined collision gestalt, as for said reference value, being set as a big value is more desirable than the value of the impact detected in the arrangement location of said impact detection means.
[0023] thus -- the case where the impact of extent which does not be alike and reach which the collision by the above-mentioned collision gestalt breaks out, and starts occupant crash protection on a car at least by setting up a reference value is added -- a threshold -- ** -- it can avoid changing into another value In addition, since the impact beyond the above-mentioned reference value may join a car when the collision by another collision gestalt breaks out, a threshold may be changed into another value.
[0024] Moreover, a certain thing of the transfer path which transmits the detection result by said impact detection means from this impact detection means to said starting judging means is desirable in the 1st or the starting control unit of the 2nd invention two or more paths in said car.
[0025] Thus, even if a transfer path is cut by a certain thing and two or more paths of one path are cut by collision, the detection result by the impact detection means can be told to a starting judging means according to other paths.
[0026] In the 1st or the starting control unit of the 2nd invention moreover, said impact detection means It is arranged ahead [of said impact measurement means / the right slanting front and ahead / left slanting] in said car, respectively. As for the transfer path which transmits the detection result by each impact detection means from each impact detection means to said starting judging means, it is desirable that there are a path passing through the right-hand side in said car and a path passing through the left-hand side in said car for

every impact detection means, respectively.

[0027] Thus, an impact detection means can detect certainly the impact which joins the impact which joins the right-hand side of a car, and left-hand side, respectively by being arranged ahead [of an impact measurement means / the right slanting front and ahead / left slanting]. Moreover, when there are a path by which a transfer path passes along the right-hand side in a car for every impact detection means, and a path passing through left-hand side, even if a right-hand side path is cut by collision, the detection result by the impact detection means can be told to a starting judging means according to a left-hand side path.

[0028] An impact measurement means to measure the impact which the 3rd invention is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, and is arranged in the position in said car, and joins this car, The starting control means which compares the value acquired based on the measured value by this impact measurement means with the threshold which changes according to a predetermined change pattern, and controls starting of said occupant crash protection based on the comparison result, When in agreement with the direction where said direction of an impact detected by direction detection means of an impact to detect the direction of the impact which joins said car, and this direction detection means of an impact was set up beforehand Let it be a summary to have a threshold change pattern modification means to change the change pattern of said threshold into another change pattern.

[0029] Thus, an impact measurement means is arranged in the position in said car, measures the impact which joins this car, and a starting control means compares the value acquired based on the measured value by the impact measurement means with the threshold which changes according to a predetermined variable, and it controls starting of said occupant crash protection by 3rd invention based on the comparison result. On the other hand, the collision direction detection means detects the direction of the impact which joins said car. And a threshold change pattern modification means changes the change pattern of said threshold into another change pattern, when in agreement with the direction where the direction detected by the impact detection means was set up beforehand. Here, in "the direction set up beforehand", the direction which accomplishes the include angle beyond a predetermined value from the center line (center line in alignment with the cross direction of a car) of a car is included.

[0030] Therefore, even if the collision gestalt of a car is a collision gestalt which cannot detect an impact easily depending on an impact measurement means, when in agreement with the direction where the direction detected by the direction detection means of an impact was set up beforehand according to the 3rd invention, the change pattern of said threshold is changed into another change pattern by the threshold change pattern modification means. Consequently, supposing it is changed into a change pattern with which the change pattern of a threshold serves as a value lower than the threshold till then When an impact with the need of starting occupant crash protection by collision joins a car in the predetermined within a time one after a collision, since the value acquired based on the measured value of an impact can exceed the above-mentioned threshold, even if it is the collision gestalt which cannot detect an impact easily depending on an impact measurement means, occupant crash protection can be certainly started with an easy configuration.

[0031] An impact measurement means to measure the impact which the 4th invention is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, and is arranged in the position in said car, and joins this car, The starting control means which compares with a predetermined threshold the value acquired based on the measured value by this impact measurement means, and controls starting of said occupant crash protection based on the comparison result, When in agreement with the direction where the direction detected by direction detection means of an impact to detect the direction of the impact which joins said car, and this direction detection means of an impact was set up beforehand, let it be a summary to have a threshold modification means to change said threshold into another value.

[0032] Thus, an impact measurement means is arranged in the position in said car, measures the impact which joins this car, and a starting control means compares the value acquired based on the measured value by the impact measurement means with the threshold which changes according to a predetermined variable, and it controls starting of said occupant crash protection by 4th invention based on the comparison result. On the other hand, the collision direction detection means detects the direction of the impact which joins said car. And a threshold modification means changes said threshold into another value, when in agreement with the direction where the direction detected by the impact detection means was set up beforehand.

[0033] Therefore, even if the collision gestalt of a car is a collision gestalt which cannot detect an impact easily depending on an impact measurement means, when in agreement with the direction where the direction detected by the direction detection means of an impact was set up beforehand according to the 4th invention, said threshold is changed into another value, for example, a value lower than the value till then, by the threshold modification means. for this reason, since the value acquired based on the measured value of an impact can exceed the above-mentioned threshold in the predetermined within a time one after a collision when an impact with the need of starting occupant crash protection by collision joins a car, even if it is the collision gestalt which cannot detect an impact easily depending on an impact measurement means, occupant crash protection can be certainly started with an easy configuration.

[0034] Moreover, as for said direction detection means of an impact, in the 3rd or the starting control unit of the 4th invention, it is desirable to detect said direction of an impact from the measured value of the impact which joins the cross direction of said car by said impact measurement means, and the value acquired based on the measured value of the impact which joins a longitudinal direction.

[0035] From each measured value of the impact which joins the cross direction and longitudinal direction which are a fundamental direction in a car, the direction of the impact which joins a car is detectable.

[0036] An impact measurement means to measure the impact which the 5th invention is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, and is arranged in the position in said car, and joins this car, The starting control means which compares the value acquired based on the measured value by this impact measurement means with the threshold which changes according to a predetermined change pattern, and controls starting of said occupant crash protection based on the comparison result, A collision gestalt distinction means to distinguish the collision gestalt at the time of said car colliding, and a taking-a-seat condition detection means to detect crew's taking-a-seat condition in said car, It is the collision gestalt as which said collision gestalt distinguished by said collision gestalt distinction means was determined beforehand. And when said taking-a-seat condition detected by said taking-a-seat condition detection means is in the taking-a-seat condition defined beforehand, let it be a summary to have a threshold change pattern modification means to change the change pattern of said threshold into another change pattern.

[0037] Thus, an impact measurement means is arranged in the position in said car, measures the impact which joins this car, and a starting control means compares the value acquired based on the measured value by the impact measurement means with the threshold which changes according to a predetermined change pattern, and it controls starting of said occupant crash protection by 5th invention based on the comparison result. On the other hand, a collision gestalt distinction means distinguishes the collision gestalt at the time of a car colliding, and a taking-a-seat condition detection means detects crew's taking-a-seat condition in a car. And a threshold change pattern modification means changes the change pattern of said threshold to said variable into another change pattern, when it is the collision gestalt as which said collision gestalt distinguished by the collision gestalt distinction means was determined beforehand and said taking-a-seat condition detected by the taking-a-seat condition detection means is in the taking-a-seat condition defined beforehand.

[0038] In addition, in the 5th invention, as a "collision gestalt distinction means", the direction of a collision and the magnitude of an impact are detected and things of the common knowledge which can distinguish a collision gestalt, such as what distinguishes a collision gestalt, and a thing which distinguishes a collision gestalt based on the data obtained by carrying out the Fourier transform of the decelerating wave by the impact, are contained, for example. Moreover, the location of the existence of wearing of a seat belt and the cross direction of a sheet, the include angle of a sheet, etc. are contained in "crew's taking-a-seat condition."

[0039] Even if the collision gestalt of a car is a collision gestalt which cannot detect an impact easily depending on a collision according to the 5th invention The collision gestalt in which a collision gestalt distinction means cannot detect such an impact easily as a collision gestalt defined beforehand, for example is detected. And when a taking-a-seat condition detection means detects that crew is in the taking-a-seat condition defined beforehand, the change pattern of said threshold is changed into another change pattern by the threshold change pattern modification means. Consequently, supposing it is changed into a change pattern with which the change pattern of a threshold serves as a value lower than the threshold till then When an impact with the need of starting occupant crash protection by collision joins a car in the predetermined within a time one after a collision, since the value acquired based on the measured value of an impact can exceed the above-mentioned threshold, even if it is the collision gestalt which cannot detect an impact easily depending on an impact measurement means, occupant crash protection can be certainly started with an easy configuration.

[0040] An impact measurement means to measure the impact which the 6th invention is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, and is arranged in the position in said car, and joins this car, The starting control means which compares with a predetermined threshold the value acquired based on the measured value by this impact measurement means, and controls starting of said occupant crash protection based on the comparison result, A collision gestalt distinction means to distinguish the collision gestalt at the time of said car colliding, and a taking-a-seat condition detection means to detect crew's taking-a-seat condition in said car, When you are the collision gestalt as which said collision gestalt distinguished by said collision gestalt distinction means was determined beforehand and said taking-a-seat condition detected by said taking-a-seat condition detection means is in the taking-a-seat condition defined beforehand, let it be a summary to have a threshold modification means to change said threshold into another value.

[0041] Thus, an impact measurement means is arranged in the position in said car, measures the impact which joins this car, and a starting control means compares the value acquired based on the measured value by the impact measurement means with the threshold which changes according to a predetermined variable, and it controls starting of said occupant crash protection by 6th invention based on the comparison result. On the other hand, a collision gestalt distinction means distinguishes the collision gestalt at the time of a car colliding, and a taking-a-seat condition detection means detects crew's taking-a-seat condition in a car. And a threshold modification means changes said threshold into another value, when it is the collision gestalt as which said collision gestalt distinguished by the collision gestalt distinction means was determined beforehand and said taking-a-seat condition detected by the taking-a-seat condition detection means is in the taking-a-seat condition defined beforehand.

[0042] Therefore, even if the collision gestalt of a car is a collision gestalt which cannot detect an impact easily depending on a collision according to the 6th invention The collision gestalt in which a collision gestalt distinction means cannot detect such an impact easily as a collision gestalt defined beforehand, for example is detected. And when a taking-a-seat condition detection means detects that crew is in the taking-a-seat condition defined beforehand, said threshold is changed into another value, for example, a value lower than the value till then, by the threshold modification means. for this reason, since the value acquired based on the measured value of an impact can exceed the above-mentioned threshold in the predetermined within a time one after a collision when an impact with the need of starting occupant crash protection by collision joins a car, even if it is the collision gestalt which cannot detect an impact easily depending on an impact measurement means, occupant crash protection can be certainly started with an easy configuration.

[0043] An impact measurement means to measure the impact which the 7th invention is a starting control unit for controlling starting of the occupant crash protection carried in this car when a car collides with a collision object, and is arranged in the position in said car, and joins this car, A speed detection means to detect the rate to said car of the supposed body if not fixed in said car, The change to said rate detected by said speed detection means of the value acquired based on the measured value by said impact measurement means is drawn, and let it be a summary to have the starting control means which controls starting of said occupant crash protection based on the derivation result.

[0044] Thus, in the 7th invention, an impact measurement means is arranged in the position in said car, the impact which joins this car is measured, and a speed detection means detects the rate to said car of the body supposed when not fixed in said car. Here, with the body to which it is not fixed in the car, crew's body which is not restrained with a seat belt etc. corresponds. A starting control means draws the change to the rate detected by the speed detection means of the value acquired based on the measured value by the impact measurement means, and controls starting of said occupant crash protection based on the derivation result. The change to the rate of the value acquired based on measured value expresses the description for every collision gestalt of a car vividly, and, moreover, is seldom influenced by the difference in a collision object etc.

[0045] Therefore, starting control corresponding to each collision gestalt can be performed, avoiding the effect by the difference in a collision object etc. by drawing the change to the above-mentioned rate of the value acquired based on measured value, and controlling starting of occupant crash protection based on it according to the 7th invention.

[0046]

[Embodiment of the Invention]

A. starting control unit a. using a satellite sensor -- explain the gestalt of operation of this invention based on an example below the 1st example. The block diagram and drawing 2 which show the starting control device with which drawing 1 used the satellite sensor as the 1st example of this invention are the explanatory view showing the arrangement part of the satellite sensor 30 and the floor sensor 32 in drawing 1 R> 1.

[0047] The starting control device of this example is equipment which controls starting of the air bag equipment 36 which is a kind of occupant crash protection, and as shown in drawing 1 , it is mainly equipped with the control circuit 20, the satellite sensor 30, the floor sensor 32, and the actuation circuit 34.

[0048] Among these, the satellite sensor 30 is a sensor for detecting whether the impact beyond a predetermined reference value joined the car 46, when the deceleration beyond a predetermined reference value joins a car 46, an internal switch specifically turns it on, and it outputs an ON signal. Moreover, the floor sensor 32 is the so-called acceleration sensor for measuring the impact which joins a car 46, specifically measures the deceleration which joins a cross direction to a car 46 at any time, and outputs the measured value as a signal.

[0049] The control circuit 20 is equipped with a central processing unit (CPU) 22, read only memory (ROM) 26, random access memory 28, the I/O circuit (I/O circuit) 24, etc., and each component is connected by bus. Among these, CPU22 performs various processing actuation of starting control according to the program memorized by ROM42. RAM28 is the memory for storing the obtained data which were obtained by the signal from each sensors 30 and 32, the result which CPU22 calculated based on it. Moreover, the I/O circuit 24 is a circuit for inputting a signal from each sensors 30 and 32, or outputting a seizing signal to the actuation circuit 34.

[0050] Moreover, according to the above-mentioned program etc., CPU22 so that it may mention later The starting control section 40 which compares with a predetermined threshold the value acquired based on the detection result of the floor sensor 32, and controls starting of air bag equipment 36 based on the comparison result, When it is detected that the impact beyond a predetermined reference value was added by the satellite sensor 30, it functions as the threshold change pattern modification section 42 which changes the change pattern of the above-mentioned threshold into another change pattern.

[0051] Moreover, the actuation circuit 34 is a circuit which energize to Squibb 38 in air bag equipment 36, and it is made to light with the seizing signal from a control circuit 20.

[0052] On the other hand, air bag equipment 36 is equipped with the generation-of-gas agent (not shown) lit by Squibb 38 besides Squibb 38 which is an ignition, the bag (not shown) which expands by the gas which occurred.

[0053] Among these components, a control circuit 20, the floor sensor 32, and the actuation circuit 34 are contained by ECU (electronic control)44 shown in drawing 2 , and are attached on the floor tunnel in a car 46 which exists in the center mostly. Moreover, the satellite sensor 30 is arranged in the anterior part of the car 46 of the right slanting front and the method of the diagonal left to the floor sensor 32 in ECU44, as shown in drawing 2 . In addition, the floor sensor sensor 32 of this example is equivalent to an impact measurement means according to claim 1, and the satellite sensor 30 is equivalent to an impact detection means according to claim 1.

[0054] Actuation of the satellite sensor 30 at the time of colliding a car, the floor sensor 32, and CPU22 is explained.

[0055] Drawing 3 is an explanatory view for explaining actuation of the satellite sensor 30 shown in drawing 1 , the floor sensor 32, and CPU22. As shown in drawing 3 , the starting control section 40 in CPU22 shown in drawing 1 is equipped with operation part 58 and the starting judging section 60.

[0056] In drawing 3 , as mentioned above, the floor sensor 32 measures the deceleration G which joins a cross direction to a car 46 at any time, and outputs the measured value G as a signal. The operation part 58 of the starting control section 40 performs a predetermined operation to the measured value G outputted from the floor sensor 32, and asks for operation value f (G). As operation value f (G), in addition, a rate (namely, value which integrates with Deceleration G once about time amount, and is acquired), A travel (namely, value which integrates with Deceleration G twice about time amount, and is acquired), It uses any they are among the synthetic components showing the moving average (namely, value acquired by carrying out fixed time quadrature of the deceleration G), the reinforcement of the specific frequency of Deceleration G, the deceleration G of the cross direction of a car, and a longitudinal direction, etc. of a vector etc. Moreover, as operation value f (G), the decelerating G (namely, the measured-value G itself) itself may be used. In this case, it is possible that the operation which carries out the multiplication of "1" to measured value G as a multiplier is performed.

[0057] Next, the starting judging section 60 of the starting control section 40 carries out the size comparison of the operation value f (G) called for by operation part 58 with a threshold T. At this time, if not fixed not in a fixed value but in the car 46 as a threshold T, the value which changes according to the rate v of the supposed bodies (for example, crew etc.) will be used.

[0058] Here, if not fixed in the car 46, the rate v of the supposed body (henceforth a non-fixing body) is a value which integrates with Deceleration G once about time amount t, and is acquired. That is, when Deceleration G joins the car which is moving forward, with an inertia force, the non-fixing body in a car is pulled ahead and accelerated toward the front to a car. The relative rate v to the car of the non-fixing body at this time can be found by integrating with Deceleration G once. In addition, by the operation part 58 mentioned above, from Deceleration G, in case such a rate v asks for operation value f (G), it is found collectively.

[0059] Drawing 4 is property drawing showing an example of change to the rate v of an example [respectively as opposed to time amount t] of change, and operation value [of Deceleration G and the rate v of a non-fixing body] f (G). In drawing 4 , in (a), (b) shows change of a rate v and (c) shows change of operation value f (G) for change of Deceleration G, respectively. In drawing 4 (a) and (b), an axis of ordinate shows Deceleration G and a rate v, respectively, and the axis of abscissa shows time amount t. Moreover, in drawing 4 (c), an axis of ordinate shows operation value f (G), and the axis of abscissa shows the rate v.

[0060] In the example shown in drawing 4 , although Deceleration G is changing violently with time amount change, the rate v which integrates with Deceleration G once and is obtained is increasing it in monotone with time amount change. Moreover, to change of the rate v shown in drawing 4 (b), operation value f (G) called for by the predetermined operation from Deceleration G is changing, as shown in drawing 4 (c).

[0061] Drawing 5 is property drawing showing an example of a change pattern to the rate v of the above-mentioned non-fixing body of a threshold T used in the 1st example. In drawing 5 , an axis of ordinate is operation value f (G) called for in operation part 58, and an axis of abscissa is the rate v of the non-fixing body in a car. As shown in drawing 5 , the threshold T is changing according to the rate v of the non-fixing body in a car. In addition, about drawing 5 (a) and the difference in (b), it mentions later.

[0062] In the starting judging section 60, it has the change pattern to the rate v of the threshold T as shown in drawing 5 beforehand. And from the change pattern, the starting judging section 60 acquires the threshold T corresponding to the rate v found by operation part 58, and carries out a size comparison with operation value f (G) similarly asked for the threshold T by operation part 58. If operation value f (G) is over the threshold T as a result of carrying out a size comparison, the starting judging section 60 will output a seizing signal A to the actuation circuit 34 shown in drawing 1 R> 1. Thereby, the actuation circuit 34 is energized to Squibb 38, and is made to light a generation-of-gas agent (not shown) in Squibb 38 that air bag equipment 36 should be started.

[0063] On the other hand, as mentioned above, when the deceleration beyond a predetermined reference value joins a car 46 at a car, an internal switch turns on the satellite sensor 30, and it outputs an ON signal. Here, the above-mentioned reference value is set as the bigger value than the value of the impact detected in the arrangement location of the satellite sensor 30, when the impact of extent which does not need to start air bag equipment by right ** joins a car 46, or when the car 46 is running the bad road. For this reason, when not joining a car 46, or when the car 46 is carrying out bad road transit, an internal switch turns on at least only the impact of extent to which the satellite sensor 30 does not need to start air bag equipment even if right ** occurs. However, even when the impact of extent which does not need to start air bag equipment when other (for example, when the collision of those other than right ** breaks out etc.) joins a car 46, an internal switch turns on and an ON signal may be outputted.

[0064] Next, the ON signal outputted from the satellite sensor 30 is inputted into the threshold change pattern modification section 42 as shown in drawing 3 . In the threshold change pattern modification section 42, the change pattern of a threshold T to a rate v is changed into another change pattern according to the ON signal from the satellite sensor 30. Specifically, the threshold change pattern modification section 42 will be changed into the change pattern which shows the change pattern of the threshold T with which the starting judging section 60 is equipped to drawing 5 (b) from the change pattern shown in drawing 5 (a), if it detects that the ON signal was inputted from the satellite sensor 30.

[0065] In drawing 5 (a) and (b), C1-C4 are curves which show the change to the rate v of a non-fixing body of operation value f (G), respectively. Among these, C1 is a curve which shows an example of change of operation value [when the impact of extent which does not need to start air bag equipment by right ** joins a car 46] f (G). C2 is a curve which shows an example of change of operation value [when the impact of extent which does not need to start air bag equipment by the collision of those other than right ** joins a car 46] f (G), and C3 and C4 are curves which show an example of change of operation value f (G) obtained during bad road transit, respectively. Since it is not necessary to drive air bag equipment with a natural thing when the car is carrying out bad road transit, the change to the rate v of operation value [when neither of the curves, C1 nor-C4, needs to start air bag equipment] f (G) will be shown.

[0066] Therefore, it is necessary to set it as a bigger value than which curve of these C1-C4 as a threshold T used for the starting judging (namely, size comparison with operation value f (G)) of the above-mentioned air bag equipment. However, it is better to set it as the smallest possible value, in order to perform the starting judging of air bag equipment at an early stage as the flume set as a bigger value than these curves. for this reason, when obtaining the change pattern of the threshold T in drawing 5 (a), although two or more curves which show change of operation value [when it being alike and not reaching] f (G) which starts the above air bag equipments first are drawn, next it is larger than these curves as a value, a pattern which approaches these curves as much as possible is obtained. The envelope of the curve of these plurality is obtained and, specifically, it is obtained as a change pattern of a threshold T.

[0067] It can be said that that the satellite sensor 30 outputted the ON signal corresponds on the other hand in other than these since an ON signal is not outputted when the case where the impact of extent which does not need to start air bag equipment by right ** joins a car 46, and the car 46 are carrying out bad road transit of the satellite sensor 30 as mentioned above. Therefore, after the satellite sensor 30 outputs an ON signal, all of these two cases can be removed from consideration. Then, when obtaining the change pattern of the threshold T shown in drawing 5 (b), all of the case where the impact of extent which does not need to start air bag equipment by right ** like a curve C1 is added, and the case where the car 46 as shown in curves C3 and C4 is carrying out bad road transit are excepted, and a change pattern is obtained. After drawing two or more curves which show change of operation value [when the impact of extent which does not need to start air bag equipment concrete probably by the collision of those other than right ** like a curve C2 is added] f (G), although it is larger than these curves as a value, a pattern which approaches these curves as much as possible is obtained like the case of drawing 5 (a). The envelope of the curve of these plurality is obtained and, specifically, let it be the change pattern of a threshold T.

[0068] Generally the floor sensor 32 tends to detect an impact (namely, deceleration G) as compared with the case of the collision with the other case of right ** in the predetermined time after a collision (namely, phase in early stages of a collision). Moreover, it is comparatively easy to detect an impact also during bad road transit. For this reason, in the collision of those other than right **, on the whole compared with an operation value (namely, curves C1, C3, and C4) in case the operation value (namely, curve C2) acquired from the detection result of the floor sensor 32 is [case / of right ** /, or bad road] under transit, a value becomes small. Therefore, on the whole compared with the change pattern which the direction of the change pattern shown in drawing 5 (b) also as a change pattern of a threshold T shows to drawing 5 (a), a value becomes small.

[0069] Now, as the change pattern of the threshold T shown in drawing 5 (a) obtained by doing in this way and (b) was mentioned above, the threshold change pattern modification section 42 has switched the ON signal from the satellite sensor 30 as a trigger.

[0070] Therefore, although the starting judging section 60 of the starting control section 40 will perform operation value f (G) and a size comparison based on the threshold T acquired from the change pattern of the threshold T shown in drawing 5 (a) until the satellite sensor 30 outputs an ON signal After the satellite sensor 30 outputs an ON signal, based on the threshold acquired from the change pattern of the threshold T shown in drawing 5 (b), operation value f (G) and a size comparison will be performed.

[0071] Drawing 6 is property drawing shown after comparing with the change pattern of the threshold T which shows the change to the rate v of operation value [when an impact with the need of starting air bag equipment by car collision is added] f (G) to drawing 5 . In drawing 6 , an axis of ordinate is operation value f (G) called for in operation part 58, and an axis of abscissa is the rate v of the non-fixing body in a car. d is a curve which shows change of operation value [when the same impact is both added in drawing 6 (a) and (b)] f (G), and after comparing with the change pattern of the threshold T shown in drawing 5 (a), it shows Curve d, and by drawing 6 (b), after comparing with the change pattern of the threshold T shown in drawing 5 (b), it shows Curve d at drawing 6 (a).

[0072] When the change pattern shown in drawing 5 (a) as a threshold T is used, as shown in drawing 6 (a), when the rate v of a non-fixing body is v1, operation value f (G) Curve d, although air bag equipment will be started exceeding a threshold T When the change pattern shown in drawing 5 (b) is used Since it becomes small on the whole compared with the case where a threshold T is drawing 5 (a), as shown in drawing 6 (b), as for Curve d, air bag equipment will be started [the rate v of a non-fixing body] for operation value f (G) exceeding a threshold T at the time smaller than a rate v1 of v2.

[0073] It will be said that it is early as time amount, so that the value of a rate v is generally small when the same impact is added, as shown in drawing 6 since the rate v of a non-fixing body increases in monotone in connection with a temporal response as shown in drawing 4 (b). Therefore, since the value is smaller than the rate v1 which the direction of the rate v2 shown in drawing 6 (b) shows to drawing 6 (a), compared with the case where the direction in the case of being shown in drawing 6 (b) shows drawing 6 (a), air bag equipment is started at an early stage. That is, in other words, compared with the case where the direction which uses the change pattern shown in drawing 5 (b) as a threshold T uses the change pattern shown in drawing 5 (a), air bag equipment will be started at an early stage.

[0074] Therefore, by the time the rate v of a non-fixing body exceeds v1, when an ON signal will be outputted from the satellite sensor 30 The direction in the case of switching to the change pattern which shows the change pattern of a threshold T to drawing 5 (b) like this example from the change pattern shown in drawing 5 R> 5 (a) with the ON signal from the satellite sensor 30 Compared with the case where only the change pattern shown in drawing 5 (a) without switching is used, air bag equipment can be started at an early stage.

[0075] As mentioned above, according to this example, the following effectiveness is acquired when the threshold change pattern modification section 42 changes the change pattern of a threshold T used for the starting judging of air bag equipment 36 into the change pattern shown in drawing 5 (b) from the change pattern shown in drawing 5 (a) with the ON signal from the satellite sensor 30. namely, even if right ** occurs, when the case where only the impact of extent which does not need to start air bag equipment joins a car, and the car are carrying out bad road transit Since the change pattern which the satellite sensor 30 does not output an ON signal, but is shown in drawing 5 (a) as a change pattern of a threshold T is used, Although operation value f (G) does not exceed a threshold T and air bag equipment is not started for example, when the impact which the collision of those other than right ** needs to break out, and needs to start air bag equipment joins a car Since the change pattern which 30 outputs an ON signal and a satellite sensor shows to drawing 5 (b) with a value small on the whole compared with the case of drawing 5 (a) as a change pattern of a threshold T is used, Operation value f (G) will exceed a threshold T in an early phase, and can start air bag equipment at an early stage..

[0076] Moreover, starting control of air bag equipment can be performed, without being influenced [most] of the class of collision object which is the partner of a car collision etc. as compared with the case where the value which changes according to the time amount t which is mentioned later is used, since the value which changes as a threshold T according to the rate v of a non-fixing body is used according to this example. Namely, although the collision gestalt is the same If change of operation value f (G) is compared by the case where the case where a rate v is received, and time amount t are received when the classes of collision object which is a collision partner differ, in the change to time amount t Although a change curve is extended or shrunken in the direction of a time-axis according to a difference of the class of collision object and there is no repeatability in the wave of a change curve, in the change to a rate v It is not concerned with the class of collision object, but the wave of change curves (namely, curve C shown in drawing 5) hardly changes, and is reproducible. For this reason, as a change pattern of the threshold T acquired as approaches these change curve, the change pattern to a rate v cannot be more easily influenced by difference of the class of collision object compared with the change putter to time amount t.

[0077] b. The block diagram showing the starting control device with which the 2nd example drawing 7 used the satellite sensor as the 2nd example of this invention, and drawing 8 are the explanatory views for explaining actuation of the satellite sensor 30 shown in drawing 7 , the floor sensor 32, and CPU22.

[0078] As the difference in the configuration to the 1st example of this example is shown in drawing 7 , CPU22 is a point equipped with the threshold modification section 62 instead of the threshold change pattern modification section 42 shown in drawing 1 . Moreover, as a difference in actuation, the activity of the threshold modification section 62 differs in the threshold change pattern modification section 42, and also the activity of the starting control section 40 is the point that the 1st examples differ. Therefore, since it is the same as that of the 1st example about other components, the explanation is omitted.

[0079] In this example, CPU22 functions as the starting control section 40 and the threshold modification section 62, as shown in drawing 7 . Moreover, the starting control section 40 is equipped with operation part 58 and the starting judging section 60 as shown in drawing 8 .

[0080] Among these, operation part 58 performs a predetermined operation to the measured value G outputted from the floor sensor 32, and asks for operation value f (G). The starting judging section 60 carries out the size comparison of the operation value f (G) obtained from operation part 58 with a threshold T. At this time, the value which changes according to not the value that changes as a threshold T according to the rate v of a non-fixing body unlike the case of the 1st example but a fixed value, or time amount t is used. The threshold T used in the starting judging section 60 is given from the threshold modification section 62.

[0081] Drawing 9 is property drawing showing an example of the temporal response of operation value [at the time of an example of the temporal response of a threshold T used in the 2nd example, a collision, or bad road transit] f (G). In drawing 9 , an axis of ordinate is operation value f (G) called for in operation part 58, and an axis of abscissa is time amount t. Moreover, E1 is a curve which shows an example of the temporal response of operation value [when an impact with the need of starting air bag equipment by right ** joins a car] f (G). E2 is a curve which shows an example of change of operation value f (G) obtained during bad road transit. E3 is a curve which shows an example of the temporal response of operation value [when an impact with the need of starting air bag equipment by the collision of those other than right ** joins a car] f (G). E4 is a curve which shows an example of the temporal response of operation value [when the impact of extent which does not need to start air bag equipment by the collision of those other than right ** joins a car] f (G).

[0082] The threshold modification section 62 is given to the starting judging section 60 by making a value as shown in drawing 9 into a threshold T. In addition, in drawing 9 , the ON signal should be inputted into the threshold modification section 62 in time of day t1 from the satellite sensor 30. Specifically, the value T1 more fixed than the satellite sensor 30 as a threshold T till the time of day t1 when an ON signal is inputted is first given to the starting judging section 60. Next, at the time of day t1 when the ON signal was inputted, a threshold T is changed into the value T2 lower than the value from the value T1 till then. Then, after it enlarges a threshold T from time of day t2 gradually till time of day t3 and time of day t3 passes, value T3 fixed as a threshold T is given to the starting judging section 60.

[0083] Among these, the fixed value T1 given as a threshold T is set up as follows until an ON signal is inputted. When the case where the impact of extent which does not need to start air bag equipment by right ** joins a car, and the car are carrying out bad road transit, in order to make it air bag equipment not start, it is necessary to include in consideration also in [these] two and to set up a threshold T in the condition that the satellite sensor 30 has not outputted the ON signal yet. Then, it asks for operation value f (G), respectively about the case where the impact of extent which does not need to start air bag equipment by car collision (right ** and in addition to this collision) joins a car first, and the case where the car is running the bad road. And maximum is drawn out of these operation value f (G), and the somewhat larger value T1 than the maximum is set up as a threshold T.

[0084] Moreover, after an ON signal is inputted, the value given as a threshold T is set up as follows. Since it stops corresponding after the satellite sensor 30 outputs an ON signal when the case where the impact of extent which does not need to start air bag equipment by the above-mentioned right ** joins a car, and the car are carrying out bad road transit, in these two cases, it can remove from consideration, and they can set up a threshold T. Then, first, two or more curves which show the temporal response of operation value [when the impact of extent which does not need to start air bag equipment by collision of those other than right ** like a curve E4 joins a car] f (G) are prepared, and the time of day when the satellite sensor 30 outputted the ON signal to each curve is filled in. And all curves are piled up, after the time of day which outputted the ON signal in each curve adjusts the time-axis of each curve so that it may be altogether in agreement at a certain event on a time-axis. Then, based on each curve after the time of day which the ON signal outputted, although it is larger than these curves as a value, the envelope of these curves is obtained to a pattern which approaches these curves as much as possible, i.e., a concrete target. And it asks for the polygonal line (T2 - T3) which is approximated to this envelope, and sets up as a threshold T.

[0085] Generally the floor sensor 32 tends to detect an impact (namely, deceleration G) as compared with the case of the collision with the other case of right ** in the predetermined time after a collision (namely, phase in early stages of a collision). Moreover, it is comparatively easy to detect an impact also during bad road transit. For this reason, in the collision of those other than right **, in the phase in early stages of a collision, a value becomes small compared with an operation value in case operation value f (G) obtained from the detection result of the floor sensor 32 is [case / of right ** /, or bad road] under transit. Therefore, a value becomes [the direction of the value T2 after an ON signal output] small [as a threshold T / T1 before an ON signal output].

[0086] now, the size comparison of the operation value f (G) is carried out with a fixed threshold with a value T1 until the satellite sensor 30 outputs an ON signal in the starting judging section 60 by giving the threshold T which the threshold modification section 62 described above according to the ON signal from the satellite sensor 30 to the starting judging section 60 -- things -- ** therefore, when the case where the impact of extent which does not need to start air bag equipment by right ** joins a car, and the car are carrying out bad road transit Like a curve E2 (when the car is carrying out bad road transit), although operation value f (G) does not exceed a threshold T and air bag equipment is not started, even if it is right ** When an impact with the need of starting air bag equipment joins a car, like a curve E1, operation value f (G) will exceed a threshold T, and air bag equipment is started.

[0087] On the other hand, after the satellite sensor 30 outputs an ON signal Since the size comparison of the operation value f (G) will be carried out with the threshold which changes in time from a value T2 to T3 For example, when an impact with the need of the collision of those other than right ** breaking out, and starting air bag equipment joins a car, like a curve E3, in time of day t1, operation value f (G) will exceed a threshold T, and air bag equipment is started.

[0088] Here, temporarily, since the thing which does not change a threshold T with an ON signal, then a threshold T are still values T1, operation value f (G) will exceed a threshold T in time of day t4. Therefore, air bag equipment can be started at an early stage like this example by changing a threshold T into the value T2 smaller than it from a value T1 with the ON signal from the satellite sensor 30.

[0089] As mentioned above, according to this example, the following effectiveness is acquired when the threshold modification section 62 changes the threshold T used for the starting judging of air bag equipment 36 with the ON signal from the satellite sensor 30, as shown in drawing 9. namely, even if right ** occurs, when the case where only the impact of extent which does not need to start air bag equipment joins a car, and the car are carrying out bad road transit Since the satellite sensor 30 does not output an ON signal but the value T1 fixed as a threshold T is used, Although operation value f (G) does not exceed a threshold T and air bag equipment is not started for example, when the impact which the collision of those other than right ** needs to break out, and needs to start air bag equipment joins a car 30 outputs [a satellite sensor] an ON signal, and since a value which increases from the value T2 smaller than a value T1 with time amount as a threshold T is used, operation value f (G) will exceed a threshold T in an early phase, and can start air bag equipment at an early stage.

[0090] By the way, it sets in the 1st example mentioned above. Although the change pattern of the threshold T after the satellite sensor 30 outputs an ON signal had been obtained by asking for these envelopes after it drew two or more curves which show change of operation value [when the impact of extent which does not need to start air bag equipment by the collision of those other than right ** is added] f (G) You may make it obtain the change pattern of a threshold T by the same approach as the 2nd example. That is, first, two or more curves which show the temporal response of operation value [when the impact of extent which does not need to start air bag equipment by the collision of those other than right ** joins a car] f (G) are prepared, and the time of day when the satellite sensor 30 outputted the ON signal to each curve is filled in. Next, after the time of day which outputted the ON signal in each curve adjusts the time-axis of each curve so that it may be altogether in agreement at a certain event on a time-axis, it asks for an envelope about each curve after the time of day when superposition and an ON signal outputted all the curves, and the change pattern of a threshold T is obtained.

[0091] Moreover, although the change pattern to the rate v of a threshold T was switched in the 1st example according to the ON signal from the satellite sensor 30 using the value which changes as a threshold T according to the rate v of the non-fixing body in a car 46 You may make it change the change pattern to the time amount t of a threshold T according to the ON signal from the satellite sensor 30 using the value which changes as a threshold T according to time amount t like the 2nd example.

[0092] Moreover, when using two or more satellite sensors by which the reference values of the deceleration which an internal switch which is explained in the 3rd below-mentioned example as a satellite sensor turns on differ, whenever an ON signal is outputted from each satellite sensor, the change pattern of a threshold T may be changed in the 1st example, and you may make it change a threshold T in the 2nd example, respectively.

[0093] c. The satellite sensor 30 used in the 1st and 2nd examples of a satellite sensor is arranged in the anterior part of the car 46 of the right slanting front and the method of the diagonal left to the floor sensor 32 in ECU44 shown in drawing 2 , as mentioned above. Thus, two satellite sensors 30 are arranged at the method of the left diagonal right for detecting an impact with a sufficient precision on the occasion of the collision from which it becomes unsymmetrical to a center line (center line in alignment with a cross direction) of a car like **** or offset collision.

[0094] However, if the signal line (namely, wire harness) picked out from the satellite sensor by the part exists in order that a carrier beam part may damage the collision of a car when such **** and offset collision arise, the wire harness is disconnected by collision and the transfer path of the ON signal of the satellite sensor from the satellite sensor to ECU44 may not be secured.

[0095] Then, he is trying to divide into the 2-way right-hand side and on the left-hand side of a car the management within the car of the wire harness picked out from one satellite sensor in each above-mentioned example.

[0096] Drawing 10 is an explanatory view for being taken out from the satellite sensor 30 used in this invention, and explaining the example of management of wire harness. While forming respectively into 2 line the wire harness picked out from the satellite sensors 30R and 30L arranged in right and left of a car 46, the wire harness formed into 2 line is divided into the right-hand side and left-hand side in a car 46, respectively, and he manages it, and is trying to connect with ECU44 in the example shown in drawing 10 (a).

[0097] Moreover, while dividing wire harness into ejection, dividing these wire harness of one line into each right-hand side and left-hand side in a car 46, respectively and managing from the satellite sensors 30R and 30L, he is trying to connect the wire harness of these right and left mutually with another wire harness in the example shown in drawing 10 (b).

[0098] The management within the car of the wire harness picked out from one satellite sensor thus, by separating into the 2-way right-hand side and on the left-hand side of a car Since it is equal to nothing that the wire harness managed right-hand side and on the left-hand side of the car is disconnected simultaneously even if either is damaged among the right-hand side of a car, and left-hand side by **** or offset collision The transfer path of an ON signal of resulting [from the above-mentioned satellite sensor] in ECU can be secured, and the dependability of starting control of air bag equipment can be improved.

[0099] In addition, since the ON signal outputted from the satellite sensors 30R and 30L will pass along the same wire harness by the example shown in drawing 10 (b), it is necessary to perform well-known signal processing to these ON signal so that these ON signal may not interfere mutually.

[0100] Next, the concrete configuration of the satellite sensor 30 is explained. Drawing 11 is the circuit diagram showing the example of the satellite sensor 30 used in this invention. In the example shown in drawing 11 (a), as shown in drawing 10 (a), the wire harness taken out from one satellite sensor 30a is formed into 2 line. And among these wire harness W1 and W2, two diodes 52 and 54 are connected so that a polarity may serve as an object for right and left mutually. Between the node P of diodes 52 and 54, and the ground, the internal switch 50, the parallel circuit which consists of a resistor 56, and the resistor 48 are connected to the serial.

[0101] In satellite sensor 30a, when the impact beyond a predetermined reference value joins a car by car collision etc., the internal switch 50 turns on and, thereby, the electrical potential difference between Node P and a ground changes. And change of this electrical potential difference is transmitted to ECU44 as an ON signal.

[0102] In this example, by car collision, even if P point of wire harness W2 was disconnected, an ON signal can be certainly transmitted to ECU through wire harness W1 by having formed wire harness into 2 line 44.

[0103] Moreover, since the electrical potential difference of Node P is not set to 0V even if the internal switch 50 turns on by having inserted the resistor 48 between the internal switch 50 and the ground, the electrical potential difference inputted into ECU44 is not set to 0V, either. On the other hand, when P point of wire harness W2 short-circuits to a body ground by car collision, the electrical potential difference inputted into ECU44 is set to 0V. Therefore, in ECU44, since the case where the case where the internal switch 50 turns on, and wire harness short-circuit to a body ground with the value of the electrical potential difference inputted is certainly discriminable, the short circuit of wire harness is easily detectable.

[0104] Moreover, since the electrical potential difference of Node P is not set to 0V even if P point of wire harness W2 short-circuits to a body ground by car collision by inserting two diodes 52 and 54 between wire harness W1 and W2, what the internal switch 50 turned on is certainly detectable.

[0105] On the other hand, in the example shown in drawing 11 (b), not only the signal line of an ON signal but the earth wire was formed into 2 line, and is connected to ECU44. Thereby, the ground potential of satellite sensor 30b can be made in agreement with the ground potential in ECU44.

[0106] d. The block diagram showing the starting control device with which the 3rd example drawing 12 used the satellite sensor as the 3rd example of this invention, and drawing 13 are the explanatory views for explaining actuation of the 1st and 2nd satellite sensor 64 shown in drawing 1212 , 66 seat-belt wearing existence detector 68, the floor sensor 32, and CPU22.

[0107] The difference in the configuration to the 2nd example of this example is the point of having newly formed the seat belt wearing existence detector 68 while using the 1st and 2nd satellite sensors 64 and 66 instead of the satellite sensor 30, as shown in drawing 12 . Moreover, as a difference in actuation, the activity of the threshold modification section 62 is a different point in the threshold modification section 42 of the 2nd example by having newly equipped the 1st and 2nd satellite sensor 64 and 66 lists with the seat belt wearing existence detector 68. Therefore, since it is the same as that of the 2nd example about other components, the explanation is omitted.

[0108] In this example, the decelerating reference values with which an internal switch turns on the 1st and 2nd satellite sensors 64 and 66 of each other differ. That is, by the 1st satellite sensor 64, to an internal switch turning on and outputting an ON signal, when the deceleration beyond reference-value K1 joins a car, by the 2nd satellite sensor 66, when the deceleration more than reference-value K2 [smaller than the above-mentioned reference value K1] (K2<K1) joins a car, an internal switch turns on and an ON signal is outputted. These 1st and 2nd satellite sensors 64 and 66 are respectively arranged in the anterior part of the car 46 of the right slanting front and the method of the diagonal left to the floor sensor 32 in ECU44 like the case of the satellite sensor 30.

[0109] Moreover, the seat belt wearing existence detector 68 detects whether the crew in a car (for example, operator) sat on the seat, and has carried the seat belt, and outputs the detection result as a detecting signal.

[0110] On the other hand, as shown in drawing 13 , the threshold modification section 62 inputs the detecting signal from the seat belt wearing existence detector 68, and gives a different threshold to the starting judging section 60 according to the existence of seat belt wearing, respectively.

[0111] Drawing 14 is property drawing in which setting in the 3rd example and showing an example of the temporal response of the threshold in a case with seat belt wearing, and the case of having no wearing. In drawing 14 , an axis of ordinate is operation value f (G), and an axis of abscissa is time amount t. That is, the threshold modification section 62 gives the threshold Tl shown in drawing 14 R> 4 to the starting judging section 60, when the threshold Th shown in drawing 14 when the detecting signal from the seat belt wearing existence detector 68 shows those with seat belt wearing is given to the starting judging section 60 and those without seat belt wearing are shown.

[0112] And further, in with seat belt wearing, the threshold modification section 62 inputs the ON signal from the 1st and 2nd satellite sensors 64 and 66, and when an ON signal is inputted from the 2nd satellite sensor 66, the signal is disregarded, but when an ON signal is inputted from the 1st satellite sensor 64, it changes a threshold into another value from the value till then. Moreover, when you have no seat belt wearing conversely, when an ON signal is inputted from the 1st satellite sensor 64, the signal is disregarded, but when an ON signal is inputted from the 2nd satellite sensor 66, a threshold is changed into another value from the value till then.

[0113] In drawing 14 , now, from the 1st satellite sensor 64, the ON signal should be inputted in time of day t6, and the ON signal should be inputted in time of day t5 from the 1st satellite sensor 64. As mentioned above in with seat belt wearing, a threshold Th will be given to the starting judging section 60 according to the ON signal from the 1st satellite sensor 64. Therefore, value T four more fixed than the 1st satellite sensor 64 as a threshold Th till the time of day t6 when an ON signal is inputted is first given to the starting judging section 60. Next, at the time of day t6 when the ON signal was inputted, a threshold Th is changed into the value T6 lower than the value from the value T four till then. Then, the threshold Th is gradually enlarged after time of day t7.

[0114] On the other hand, when you have no seat belt wearing, as mentioned above, a threshold Tl will be given to the starting judging section 60 according to the ON signal from the 2nd satellite sensor 66. Therefore, the value T5 more fixed than the 2nd satellite sensor 66 as a threshold Tl till the time of day t5 when an ON signal is inputted is first given to the starting judging section 60. Next, at the time of day t5 when the ON signal was inputted, a threshold Tl is changed into the value T7 lower than the value from the value T5 till then. Then, the threshold Tl is gradually enlarged after time of day t8.

[0115] In this example, if a threshold is compared by the case with seat belt wearing, and the case where he has no wearing, as shown in drawing 14 , it is set as the value smaller than the threshold Th in case the direction of the threshold Tl in the case of having no seat belt wearing is with wearing. That is, if a threshold until an ON signal is inputted is specifically compared, the value T5 will be set as the value smaller than value T four, and if the threshold immediately after an ON signal input is compared, the value T7 is set as the value smaller than a value T6. Furthermore, even if it compares the threshold after it, the direction of a threshold Tl is set as the bigger value than a threshold Th.

[0116] Thus, the reason set as the value smaller than the threshold Th in case the direction of the threshold Tl in the case of having no seat belt wearing is with wearing Since protection of crew is achieved according to restraint with a seat belt even if a certain amount of impact joins a car when crew has carried the seat belt, Although the need of starting air bag equipment is not so high, when crew has not carried the seat belt It is because possibility of crew's body moving according to an inertia force, and colliding with the article in a car since there is no constraint with a seat belt is high even when a comparatively small impact is added, so it is necessary to start air bag equipment.

[0117] Moreover, the reason set as the value with the reference value K2 smaller than the reference value K1 in the 1st satellite sensor 64 in the 2nd satellite sensor 66 is as follows. That is, in with wearing, the ON signal of the 1st satellite sensor 64 is used to being used when the ON signal of the 2nd satellite sensor 66 has no seat belt wearing. On the other hand, as mentioned above, a threshold until an ON signal is inputted from a satellite sensor is set as a small value compared with the case where the direction without seat belt wearing is with wearing. Therefore, it is because it is more desirable to have set the reference value K2 in the 2nd satellite sensor 66 as the part with a small threshold until an ON signal is inputted, and the small value, and to set the reference value K1 in the 1st satellite sensor 64 as a part with the above-mentioned large threshold and a big value.

[0118] Since the threshold therefore used without those of crew with seat belt wearing and wearing for the starting judging of air bag equipment is changeable in this example as explained above, corresponding to crew's seat belt wearing condition, starting control of air bag equipment with a more high precision can be performed. Moreover, since the timing of an ON signal, i.e., the timing which changes a threshold into another value, is changeable by the case with seat belt wearing, and the case where he has no wearing, by preparing two satellite sensors by which reference values differ, and using properly by the case with seat belt wearing, and the case where he has no wearing, starting control of air bag equipment with a still higher precision can be performed.

[0119] By the way, although the 1st satellite sensor 64 and the 2nd satellite sensor 66 were constituted as a separate sensor, these two sensors are unified and you may make it constitute from one sensor in this example.

[0120] Drawing 15 is the circuit diagram showing the example in the case of unifying the 1st and 2nd satellite sensors 64 and 66 shown in drawing 12 , and constituting from one satellite sensor. As shown in drawing 15 R> 5, the satellite sensor 78 has two internal switches 70 and 72, and each internal switches 70 and 72 of both are connected so that it may become a serial mutually among terminals P1 and P2, after connecting resistors 74 and 76 to juxtaposition. And the internal switch 70 is turned on when the impact beyond reference-value K1 mentioned above joins a car for example, and the internal switch 72 is constituted so that it may turn on, when the impact beyond reference-value K2 joins a car. When [neither of] only an impact smaller than a reference value K2 joins a car by this, the internal switches 70 and 72 turn on, but when an impact smaller than a reference value K1 is added more than by reference-value K2, only the internal switch 72 turns on, and when the impact beyond reference-value K1 is added, the internal switch 70 will turn on further. Therefore, since the electrical potential difference between terminals P1 and P2 changes when the internal switches 70 and 72 turn on, respectively, change of this electrical potential difference is transmitted to ECU44 as an ON signal corresponding to each reference values K1 and K2.

[0121] Components mark can be decreased by using the above unified satellite sensors 78.

[0122] By the way, in the 3rd example, although two satellite sensors 64 and 66 of each other by which reference values differ were used as a satellite sensor, the above three satellite sensors may be used.

[0123] e. The block diagram showing the starting control device with which the 4th example drawing 16 used the satellite sensor as the 4th example of this invention, and drawing 17 are the explanatory views for explaining actuation of the satellite sensor 30 shown in drawing 1616 , the floor sensor 32, and CPU22.

[0124] The difference in the configuration to the 3rd example of this example is the same as having used in the 1st and 2nd examples, without using the 1st and 2nd satellite sensors 64 and 66, as shown in drawing 16 . It is a point using the usual satellite sensor 30. Moreover, as a difference in actuation, the activity of the threshold modification section 80 is a different point in the threshold modification section 62 of the 3rd example by having used the usual satellite sensor 30. Therefore, since it is the same as that of the 3rd example about other components, the explanation is omitted.

[0125] In this example, as shown in drawing 17 , the threshold modification section 80 inputs the detecting signal from the seat belt wearing existence detector 68, and gives a different threshold to the starting judging section 60 according to the existence of seat belt wearing, respectively.

[0126] Drawing 18 is property drawing in which setting in the 4th example and showing an example of the temporal response of the threshold in a case with seat belt wearing, and the case of having no wearing. In drawing 18 , an axis of ordinate is operation value f (G), and an axis of abscissa is time amount t. That is, the threshold modification section 80 gives the threshold Tn shown in drawing 18 R> 8 to the starting judging section 60, when the threshold Ta shown in drawing 18 when the detecting signal from the seat belt wearing existence detector 68 shows those with seat belt wearing is given to the starting judging section 60 and those without seat belt wearing are shown.

[0127] Moreover, the threshold modification section 80 will change a threshold into another value from the value till then, if it detects that the ON signal was inputted from the satellite sensor 30.

[0128] In drawing 18 , the ON signal should be now inputted in time of day t9 from the satellite sensor 30. A threshold Ta will be given to the starting judging section 60 as mentioned above in with seat belt wearing.

Therefore, the value T8 more fixed than the satellite sensor 30 as a threshold Ta till the time of day t9 when an ON signal is inputted is first given to the starting judging section 60. Next, at the time of day t9 when the ON signal was inputted, a threshold Ta is changed into the value T10 lower than the value from the value T8 till then. Then, the threshold Ta is gradually enlarged after time of day t10.
[0129] On the other hand, when you have no seat belt wearing, a threshold Tn will be given to the starting judging section 60 as mentioned above. Therefore, the value T9 more fixed than the satellite sensor 66 as a threshold Tn till the time of day t9 when an ON signal is inputted is first given to the starting judging section 60. Next, at the time of day t9 when the ON signal was inputted, a threshold Tn is changed into the value T10 lower than the value from the value T9 till then. Then, the threshold Tn is gradually enlarged after time of day t10.
[0130] Also in this example, if a threshold is compared by the case with seat belt wearing, and the case where he has no wearing, as shown in drawing 18 , it is set as the value in general smaller than the threshold Ta in case the direction of the threshold Tn in the case of having no seat belt wearing is with wearing. If a threshold until an ON signal is inputted is specifically compared, even if it compares the threshold after setting the value T9 as the value smaller than a value T8 and carrying out after [an ON signal input] predetermined time progress, the direction of a threshold Tn is set as the bigger value than a threshold Ta. In addition, the threshold immediately after an ON signal input is the value with the same thresholds Tn and Ta.
[0131] Thus, the reason set as the value in general smaller than the threshold Ta in case the direction of the threshold Tn in the case of having no seat belt wearing is with wearing is the same reason as the reason explained in the 3rd above-mentioned example.
[0132] As mentioned above, in this example, starting control of air bag equipment with a more high precision can be performed corresponding to crew's seat belt wearing condition by switching the threshold therefore used without those of crew with seat belt wearing, and wearing for the starting judging of air bag equipment. Moreover, although the timing of an ON signal is unchangeable by the case with seat belt wearing, and the case where he has no wearing, since the usual satellite sensor 30 can be used like the 3rd example, components mark can be lessened as compared with the 3rd example.
[0133] By the way, in this example, when he had no wearing and the threshold modification section 80 detected [a case with seat belt wearing or] that the ON signal was inputted from the satellite sensor 30, it had changed the threshold into another value from the value till then. However, when you have no seat belt wearing, only in with seat belt wearing, it is not concerned with an ON signal from the satellite sensor 30, but it may always be made to change a threshold with the ON signal from the satellite sensor 30, and to make a threshold regularity.
[0134] Only in with seat belt wearing, a threshold is changed, and drawing 19 is an explanatory view for explaining the example which used the fixed threshold, when you have no seat belt wearing. In drawing 19 , an axis of ordinate is operation value f (G), and an axis of abscissa is time amount t. That is, the threshold modification section 80 gives the threshold Tc shown in drawing 19 (b) to the starting judging section 60, when the threshold Tv shown in drawing 19 (a) when the detecting signal from the seat belt wearing existence detector 68 shows those with seat belt wearing is given to the starting judging section 60 and those without seat belt wearing are shown. That is, in with seat belt wearing, the value T11 fixed as a threshold Tv is given to the starting judging section 60 until an ON signal is inputted from the satellite sensor 30, but if an ON signal is inputted, a threshold Tv will be changed into another value T13 from the value T11 till then. On the other hand, when you have no seat belt wearing, regardless of the input of an ON signal, the fixed value T12 is always given to the starting judging section 60 as a threshold Tc from the satellite sensor 30.
[0135] Thus, you may make it change the logic of a starting judging of air bag equipment by the case with seat belt wearing, and the case where he has no wearing.
[0136] Now, although the threshold was changed according to the existence of seat belt wearing of crew, you may make it change a threshold instead of the existence of seat belt wearing in the 3rd and 4th examples explained above according to the location of the cross direction of a sheet, the include angle of a sheet, etc.
[0137] Moreover, although two kinds of thresholds (namely, the 3rd example a threshold Th, a threshold Tl, and the 4th example a threshold Tv and a threshold Tn) were prepared by the case with seat belt wearing of crew, and the case where he has no wearing and starting of air bag equipment was controlled based on each threshold for example, when the car carries the seat belt with pretensioner besides air bag equipment as occupant crash protection The threshold which was not concerned with the existence of seat belt wearing, but was used as an object for those with seat belt wearing Namely, in the 3rd example, threshold Tv) is used as an object for the starting judging of air bag equipment in a threshold Th and the 4th example. (-- You may

make it use the threshold (namely, the 3rd example a threshold Tl and the 4th example the threshold Tc) used as a seat-belt-wearing-less ** as an object for the starting judging of a seat belt with pretensioner.

[0138] Moreover, drawing 20 is the explanatory view showing the example of an air bag in which two inflators were attached. The air bag 88 shown in drawing 2020 is equipped with the 1st inflator 84 and the 2nd inflator 86, and these inflators 84 and 86 operate at the time of starting of air bag equipment, and generate gas in an air bag 88, and it blows up an air bag 88. Under the present circumstances, a way, a pressure, etc. to which an air bag 88 swells can be adjusted by controlling which inflator is operated or whether it is made to operate to what kind of actuation timing.

[0139] so, as shown in drawing 20 , when two inflators 84 and 86 are attached in the air bag 88 in air bag equipment 36 The threshold which was not concerned with the existence of seat belt wearing, but was used as an object for those with seat belt wearing Namely, in the 3rd example, threshold Tv) is used as an object for actuation of the 1st inflator 84 in a threshold Th and the 4th example. (-- You may make it use the threshold (namely, the 3rd example a threshold Tl and the 4th example the threshold Tc) used as a seat-belt-wearing-less ** as an object for actuation of the 2nd inflator 86.

[0140] Moreover, in the 3rd and 4th examples, although the case where a threshold was changed with the ON signal from a satellite sensor using the threshold modification section was explained as an example, it cannot be overemphasized that it can be adapted also about the case where a threshold change pattern is changed with the ON signal from a satellite sensor using the threshold change pattern modification section.

[0141] B. -- starting control unit a. using a biaxial sensor -- the block diagram showing the starting control unit with which the 5th example drawing 21 used the biaxial sensor as the 5th example of this invention, and drawing 22 are the explanatory views for explaining actuation of the biaxial sensor 90 shown in drawing 21 , the floor sensor 32, and CPU22.

[0142] The difference in the configuration to the 1st example of this example is a point equipped with the biaxial sensor 90 instead of the satellite sensor 30, as shown in drawing 21 . Moreover, as a difference in actuation, the activity of the biaxial sensor 90 differs in the satellite sensor 30, and also the activity of the threshold change pattern modification section 92 is a different point in the threshold change pattern modification section 42 of the 1st example. Therefore, since it is the same as that of the 1st example about other components, the explanation is omitted. In addition, the biaxial sensor 90 of this example is equivalent to an impact measurement means according to claim 9.

[0143] In this example, the threshold change pattern modification section 92 is equipped with the integral operation part 94, the direction judging section 96, and the threshold change pattern change-over section 98, as shown in drawing 22 .

[0144] Drawing 23 is the explanatory view showing the arrangement part within the car 46 of the biaxial sensor 90 in drawing 21 . It is arranged in the center section of the car 46 as shown in drawing 23 .

[0145] In this example, the biaxial sensor 90 is a sensor for detecting the direction of the impact which joins a car, as shown in drawing 23 , measures the deceleration Gx which joins a cross direction (henceforth x directions) to a car 46, and the deceleration Gy which joins a longitudinal direction (henceforth the direction of y) at any time, and, specifically, outputs each measured value as a signal. Moreover, the threshold change pattern modification section 92 changes into another change pattern the change pattern of a threshold used in the starting judging section 60, when in agreement with the direction where the direction of the impact detected by the biaxial sensor 90 was set up beforehand.

[0146] Here, actuation of the threshold change pattern modification section 92 is further explained to a detail. As shown in drawing 22 , in the threshold change pattern modification section 92, the integral operation part 94 integrates with the measured value (namely, deceleration of x directions and deceleration of the direction of y) Gx and Gy outputted from the biaxial sensor 90 once about time amount t, respectively, and obtains integral value integralGxdt of x directions, and integral value integralGydt of the direction of y, respectively. Here, since it is the rate v of the non-fixing body in a car as the value which integrates with deceleration once about time amount t, and is acquired was mentioned above, integral value integralGxdt and integralGydt will express the rate of the x directions of a non-fixing body, and the rate of the direction of y, respectively.

[0147] Next, the direction judging section 96 judges first the direction of the impact which joins a car 46 from integral value integralGxdt obtained by the integral operation part 94, and integralGydt. And an indication signal is given to the threshold change pattern change-over section 98, when it judges whether the collision gestalten of a car are **** and offset collision by judging whether it is in agreement in the direction in which the direction of the impact was defined beforehand, or it is the collision of those other than these (namely, right **, a pole collision, an undershirt RAIDO collision) and judges with their being

**** or offset collision.

[0148] Drawing 24 is property drawing having plotted and shown x obtained by the integral operation part 94 of drawing 22 , integral value integralGxdt of the direction of y, and integralGydt on rectangular coordinates, respectively. In drawing 24 R> 4, an axis of ordinate shows integral value integralGxdt of x directions, and the axis of abscissa shows integral value integralGydt of the direction of y.

[0149] in drawing 24 , (a) comes out, compares the curve which plots an integral value and is obtained, and is indicated to be the case where the car S1 which is a collision partner **** to the self car S0, and the case where a car S2 carries out a slanting side impact. In drawing 24 (a), M1 is a curve when a car S1 ****, and M2 is a curve when a car S2 carries out a slanting side impact. Moreover, N1 shows the direction of the impact added to a car S0, when a car S1 and a car S0 collide, and N2 shows the direction of the impact added to a car S0, when a car S2 and a car S0 collide.

[0150] Since the integral value of Deceleration G, i.e., the rate of the non-fixing body in a car, increases from 0 gradually with the time amount progress after a collision as shown in drawing 4 (b), as shown in drawing 24 (a), the curves M1 and M2 which plot an integral value and are obtained have also been prolonged toward the circumference from 0 which is the zero of an axis of coordinates with the time amount progress after a collision. on the other hand, if the relation between curves M1 and M2 and the directions N1 and N2 of an impact is looked at, the direction where curves M1 and M2 are prolonged [near the 0 which is a zero] (namely, the phase immediately after a collision -- setting), and the direction of the impact which joins a car S0 are clearly in agreement. Therefore, if the curve which plots integral value integralGxdt of the x and the direction of y as shown in drawing 24 , and integralGydt on rectangular coordinates, and is obtained is used, the direction of the impact which joins a car can be judged easily.

[0151] Then, in the direction judging section 96 shown in drawing 22 , it is the above approaches and the direction of the impact which joins a car 46 is judged from integral value integralGxdt obtained by the integral operation part 94, and integralGydt.

[0152] In drawing 24 , (b) compares and shows the curve which plots an integral value and is obtained about each collision gestalt. In drawing 24 (b), each of M3 and M6 is curves when **** occurs at high speed (high-speed ****), M4 is a curve when **** occurs with medium speed (medium-speed ****), and M5 is a curve when offset collision breaks out with medium speed (medium-speed offset). Moreover, M7-M9 which were drawn with the broken line are a curve when right **, a pole collision, and an undershirt RAIDO collision break out.

[0153] As shown in drawing 24 (b), when the collision which becomes unsymmetrical to a center line (center line which met in the x directions) of a car like **** or offset collision breaks out, the direction of the impact which joins a car will have an include angle beyond a predetermined value to the above-mentioned center line. On the other hand, when an almost symmetrical collision breaks out to the center line of a car like right **, a pole collision, or an undershirt RAIDO collision, the direction of the impact which joins a car becomes in the direction which met in the x directions (namely, cross direction of a car) in general. therefore, in other words, it judges whether the direction of an impact has the include angle beyond the above-mentioned predetermined value from the center line of a car, and has the include angle beyond the above-mentioned predetermined value -- if it becomes, it can determine to be **** or offset collision, and does not have the include angle beyond the above-mentioned predetermined value -- if it becomes, it can determine to be right **, a pole collision, or an undershirt RAIDO collision.

[0154] Then, it judges whether the direction of the direction judging section 96 of a collision corresponds with the direction (namely, direction which accomplishes the include angle beyond the above-mentioned predetermined value from the center line of a car) defined beforehand using the above approaches, and judges whether the collision gestalten of a car are **** and offset collision, or it is the other collision. And an indication signal is given to the threshold change pattern change-over section 98 when it judges with the direction judging section 96 being **** or offset collision.

[0155] Here, the indication signal given from the direction judging section 96 is a signal which is equivalent to an ON signal from the satellite sensor in each example mentioned above, and the threshold change pattern change-over section 98 switches two change patterns about the threshold T which is equivalent to the change pattern shown in drawing 5 (a) and (b) by making the indication signal into a trigger.

[0156] Therefore, although a change pattern which is equivalent to the change pattern shown in drawing 5 (a) will be used as a change pattern of a threshold T until the direction judging section 96 outputs an indication signal when the starting judging section 60 of the starting control section 40 carries out the size comparison of the operation value f (G) with a threshold T After the direction judging section 96 outputs an indication signal, a change pattern which is equivalent to the change pattern shown in drawing 5 (b) will be

used.
[0157] here, the change pattern of the threshold T equivalent to the change pattern shown in drawing 5 (a) draws two or more curves which show change of operation value [when it being alike and not reaching] f (G) which starts air bag equipment about various collision gestalten including right ** etc., and although it is larger than these curves as a value, it can obtain them as a pattern which approaches these curves as much as possible.
[0158] On the other hand, an indication signal is given to the threshold change pattern change-over section 98 only when it judges with the direction judging section 96 being **** or offset collision, as mentioned above. Therefore, since I hear that there is a collision gestalt neither at right ** nor a pole collision nor an undershirt RAIDO collision, after an indication signal is given, ************ can remove all of these collision gestalten from consideration in the direction judging section 96 to an indication signal, and it should just take **** or offset collision into consideration. Therefore, the change pattern of the threshold T equivalent to the change pattern shown in drawing 5 (b) is obtained as a pattern which approaches these curves as much as possible, although it is larger than these curves as a value after drawing two or more curves which show change of operation value [when the impact of extent which needs to start air bag equipment neither by **** nor offset collision is added] f (G).
[0159] Therefore, since the change pattern of the threshold T which is equivalent to the change pattern shown in drawing 5 (b) as a threshold T becomes small on the whole rather than the change pattern of the threshold T equivalent to the change pattern shown in drawing 5 (a), the direction at the time of using the change pattern of the threshold T equivalent to the change pattern shown in drawing 5 (b) can start air bag equipment at an early stage.
[0160] According to this example, as mentioned above, the threshold change pattern modification section 92 When it judges with it being in agreement with the direction (namely, direction which accomplishes the include angle beyond the above-mentioned predetermined value from the center line of a car) where the direction of the impact which joins a car was defined beforehand The following effectiveness is acquired by changing into the change pattern equivalent to the change pattern which showed the change pattern of a threshold T used for the starting judging of air bag equipment 36 to drawing 5 (b) from the change pattern equivalent to the change pattern shown in drawing 5 (a). namely, when right **, a pole collision, or an undershirt RAIDO collision breaks out Since the change pattern equivalent to the change pattern which the direction judging section 96 did not give an indication signal to the threshold change pattern change-over section 98, but was shown in drawing 5 (a) as a change pattern of a threshold T is used, When only the impact of extent which does not need to start air bag equipment even if right **, a pole collision, or an undershirt RAIDO collision breaks out joins a car, operation value f (G) does not exceed a threshold T, and air bag equipment is not started. However, when **** or offset collision breaks out In order that the direction judging section 96 may give an indication signal to the threshold change pattern change-over section 98, The change pattern equivalent to the change pattern shown in drawing 5 (b) with a value small on the whole compared with the above-mentioned change pattern as a change pattern of a threshold T will be used. Therefore, since operation value f (G) exceeds a threshold T in an early phase when the impact which needs to start air bag equipment by **** or offset collision joins a car, air bag equipment can be started at an early stage.
[0161] b. The 6th example and the direction of the impact which joins a car in time using the biaxial sensor mentioned above are detected, and the approach of changing the change pattern of a threshold based on it can be applied also when changing a threshold like the 2nd example naturally.
[0162] The block diagram showing the starting control device with which drawing 25 used the biaxial sensor as the 6th example of this invention, and drawing 26 R> 6 are the explanatory views for explaining actuation of the biaxial sensor 90 shown in drawing 25 , the floor sensor 32, and CPU22.
[0163] The difference in the configuration to the 5th example of this example is the point that CPU22 is equipped with the threshold modification section 100 instead of the threshold change pattern modification section 92, as shown in drawing 25 . Moreover, as a difference in actuation, the activity of the threshold modification section 100 is a different point in the threshold change pattern modification section 92. Therefore, since it is the same as that of the 5th example about other components, the explanation is omitted.

[0164] In this example, the threshold modification section 100 is equipped with the integral operation part 94, the direction judging section 96, and the threshold controller 102, as shown in drawing 26 .
[0165] Among these, since actuation of the integral operation part 94 and the direction judging section 96 is the same as that of the 5th example, only actuation of the threshold controller 102 is explained. The

threshold controller 102 is given to the starting judging section 60 by making into a threshold T a value which is equivalent to the value shown in drawing 9 . That is, a value fixed as a threshold T is given to the starting judging section 60 until an indication signal is inputted from the direction judging section 96. Next, when an indication signal is inputted, a threshold T is changed into a value lower than the value from the value till then. If a threshold T is enlarged gradually and it passes over a certain time of day after that, a value fixed as a threshold T will be given to the starting judging section 60.

[0166] Among these, the fixed value given starting judging section 60 as a threshold T is set up as follows until an indication signal is given. When the impact of extent which does not need to start air bag equipment by right ** joins a car for example, in order to make it air bag equipment not start since the collision gestalt is decided yet neither to **** nor offset collision, it is necessary to include right **, a pole collision, an undershirt RAIDO collision, etc. in consideration, and to set up a threshold T in the condition that the direction judging section 96 has not given the indication signal. Then, it asks for operation value f (G), respectively about the case where the impact of extent which does not need to start air bag equipment by car collision (right ** and in addition to this collision) joins a car first. And maximum is drawn out of these operation value f (G), and a somewhat larger value than the maximum is set up as a threshold T.

[0167] Moreover, after an indication signal is given, the value given to the starting judging section 60 as a threshold T is set up as follows. Since right **, a pole collision, an undershirt RAIDO collision, etc. stop corresponding after the direction judging section 96 gives an indication signal, these collision gestalt can be removed from consideration and can set up a threshold T. Then, two or more curves which show the temporal response of operation value [when the impact of extent which needs to start air bag equipment neither by **** nor offset collision joins a car] f (G) are prepared, and the time of day considered that the direction judging section 96 gave the indication signal to each curve is filled in. And all curves are piled up, after the time of day adjusts the time-axis of each curve so that it may be altogether in agreement at a certain event on a time-axis. Then, based on each curve after the above-mentioned time of day, although it is larger than these curves as a value, a pattern which approaches these curves as much as possible is obtained. And it asks for the polygonal line which is approximated to this pattern, and sets up as a threshold T.

[0168] As mentioned above, according to this example, the following effectiveness is acquired by changing, as the threshold T used for the starting judging of air bag equipment was mentioned above based on the judgment in agreement with the direction (namely, direction which accomplishes the include angle beyond the above-mentioned predetermined value from the center line of a car) where the direction of an impact where the threshold change pattern modification section 92 joins a car was defined beforehand. namely, when right **, a pole collision, or an undershirt RAIDO collision breaks out Since a fixed value whose direction judging section 96 does not give an indication signal to the threshold controller 102, but mentioned it above as a threshold T is used, When only the impact of extent which does not need to start air bag equipment even if right **, a pole collision, or an undershirt RAIDO collision breaks out joins a car, operation value f (G) does not exceed a threshold T, and air bag equipment is not started. when **** or offset collision breaks out, in order that [however,] the direction judging section 96 may give an indication signal to the threshold controller 102 -- as a threshold T -- up Norikazu -- since a value which increases from a value smaller than the value of a law with time amount is used, operation value f (G) will exceed a threshold T in an early phase, and can start air bag equipment at an early stage.

[0169] In addition, this invention can be carried out in various modes in the range which is not restricted to the above-mentioned example or the above-mentioned operation gestalt, and does not deviate from the summary.

[Translation done.]

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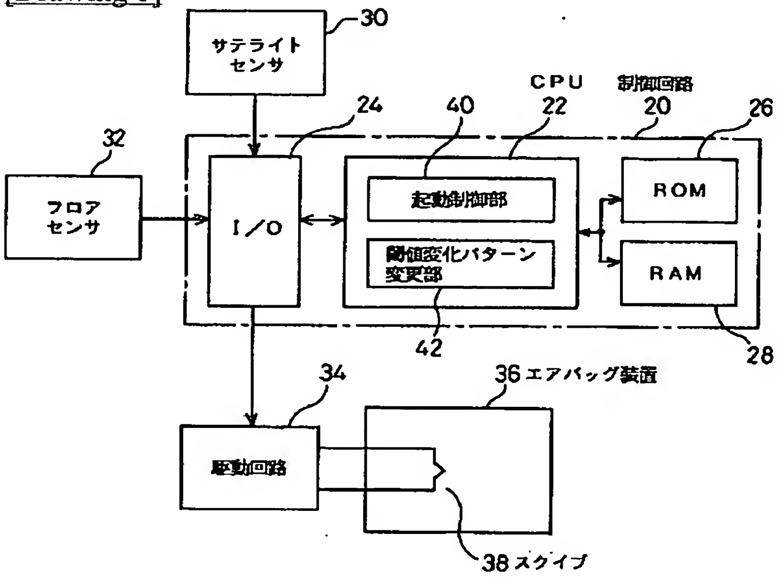
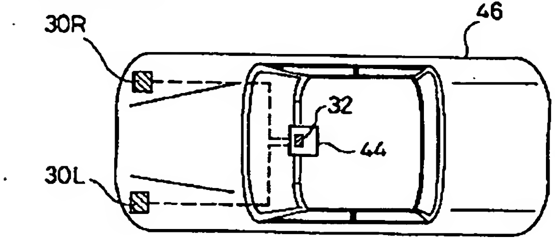
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

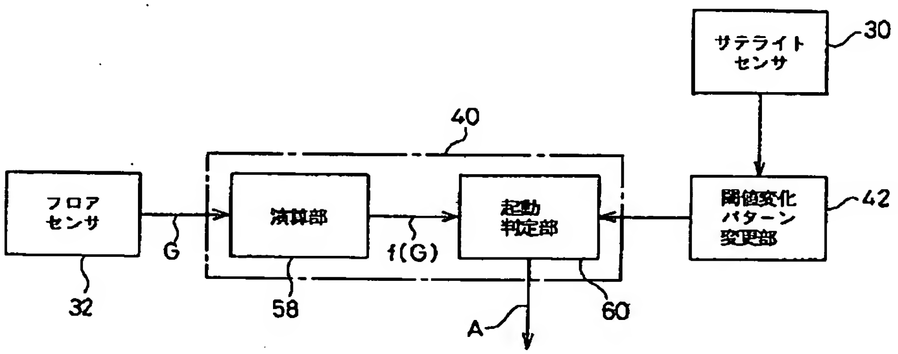
[Drawing 1]


サテライトセンサ
30
フロアセンサ
32
I／O
24
40
CPU
22
制御回路
20
26
ROM
RAM
28
起動制御部
閾値変化パターン変更部
42
34
駆動回路
36 エアバッグ装置
38 スクイブ

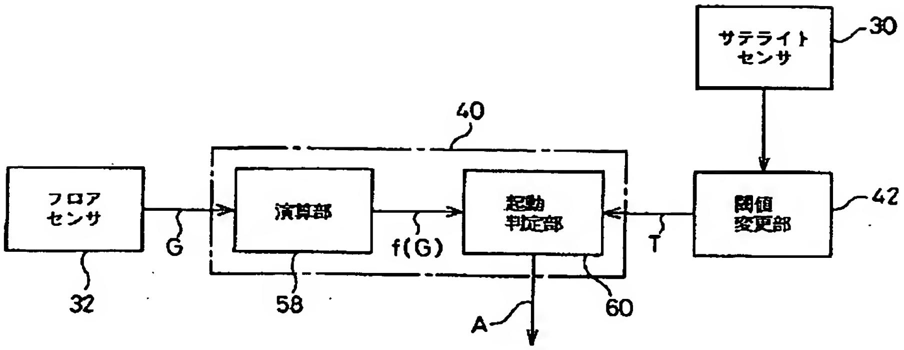
[Drawing 2]


30R
46
32
44
30L

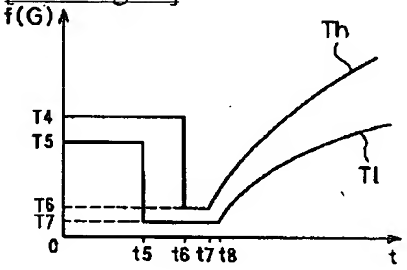
[Drawing 3]


サテライトセンサ
30
40
フロアセンサ
G
32
演算部
f(G)
58
起動判定部
A
60
閾値変化パターン変更部
42

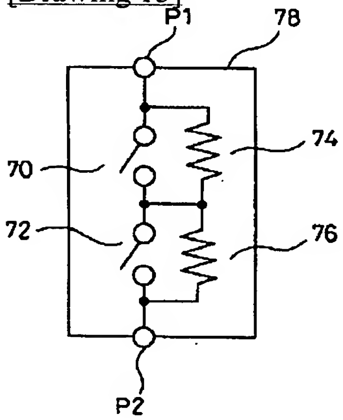
[Drawing 8]


サテライトセンサ
30
40
フロアセンサ
演算部
起動判定部
閾値変更部
42
G
f(G)
T
32
58
60
A

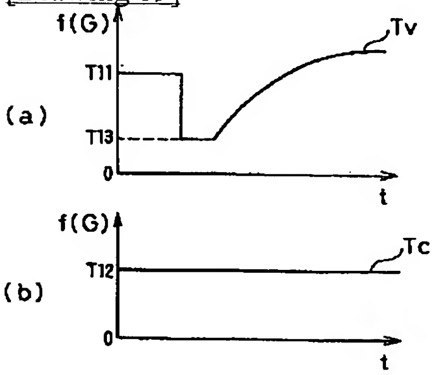
[Drawing 14]



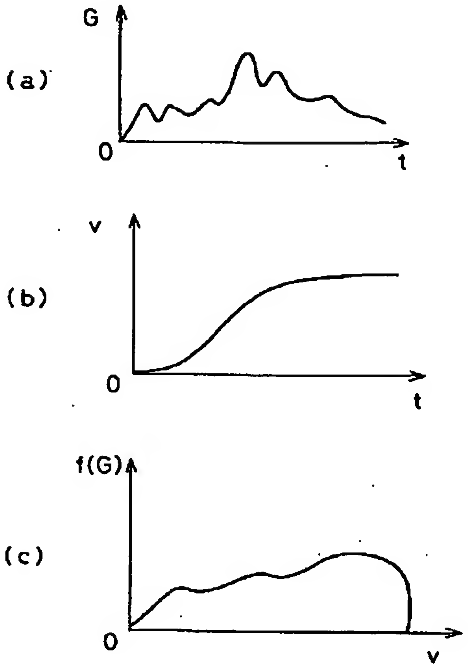
[Drawing 15]


P1
78
74
70
72
76
P2

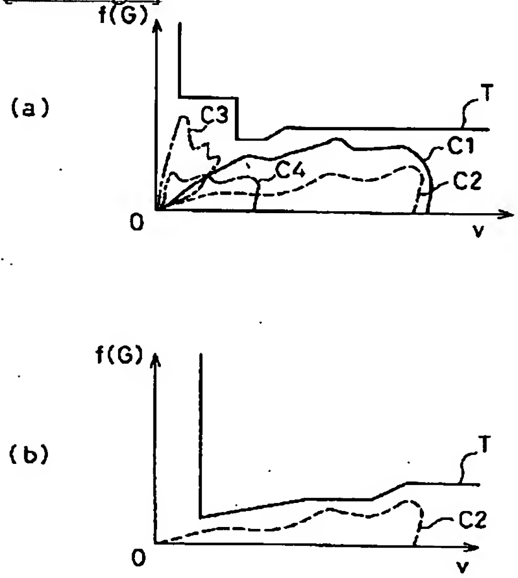
[Drawing 19]



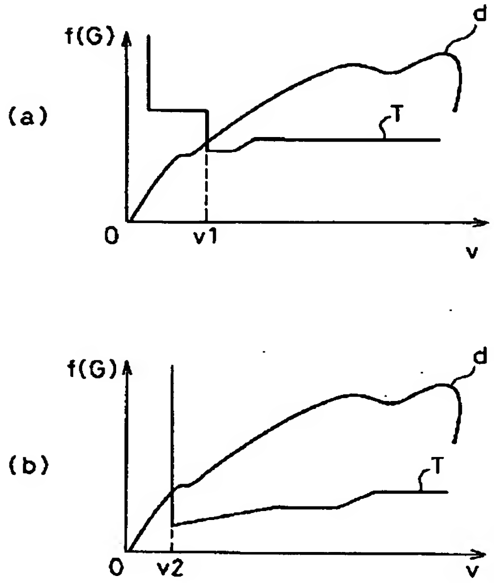
[Drawing 4]



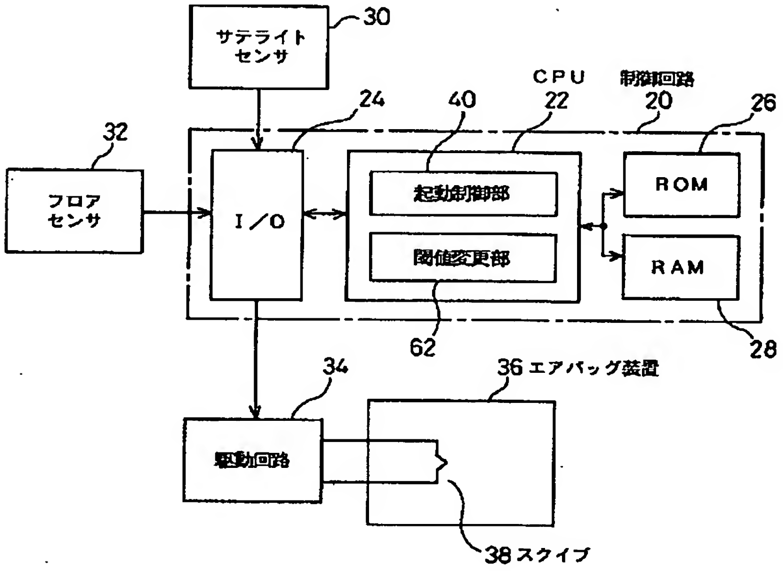
[Drawing 5]



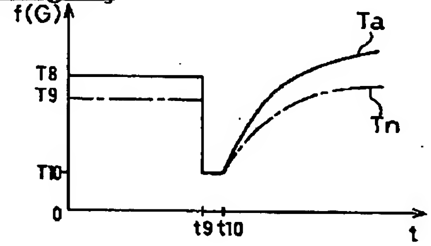
[Drawing 6]



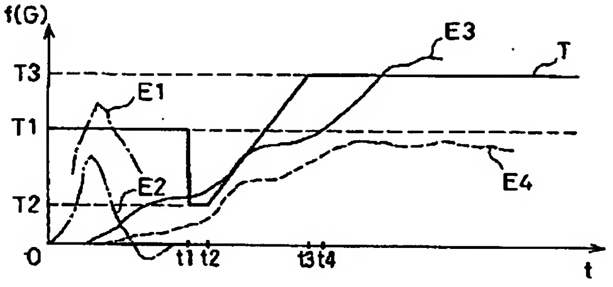
[Drawing 7]


サテライトセンサ
30
CPU
制御回路
24
40
22
20
26
32
フロアセンサ
I/O
起動制御部
閾値変更部
ROM
RAM
62
28
34
36 エアバッグ装置
駆動回路
38 スクイブ

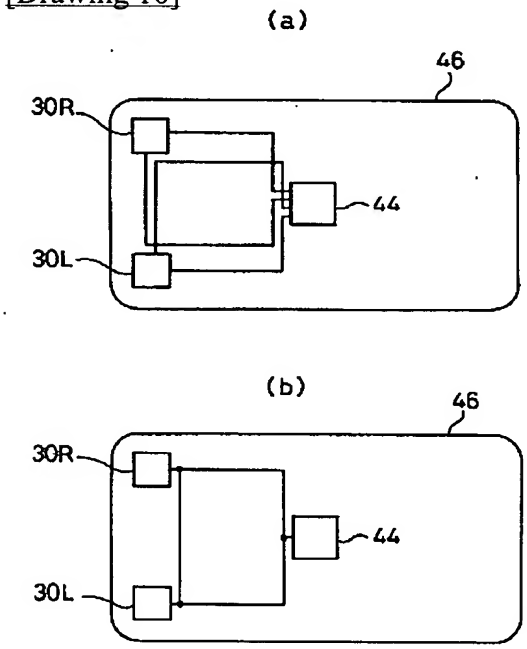
[Drawing 18]



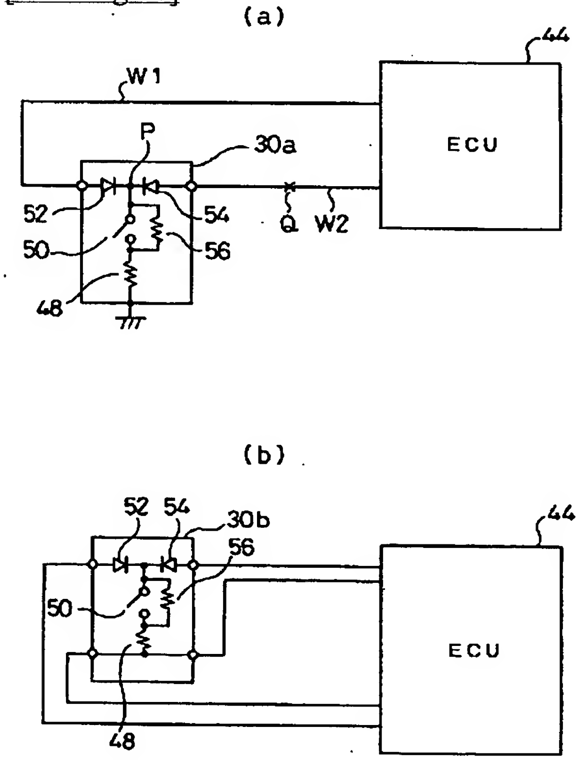
[Drawing 9]



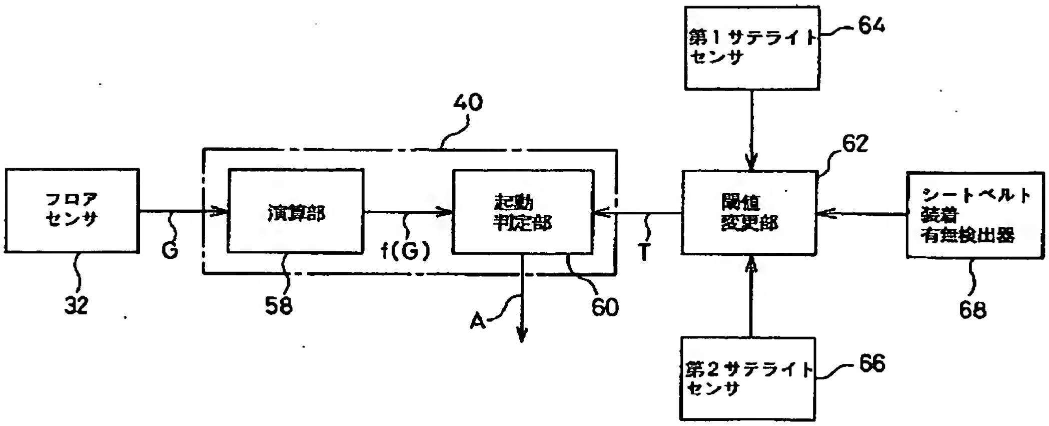
[Drawing 10]


(a)
46
30R
44
30L
(b)
46
30R
44
30L

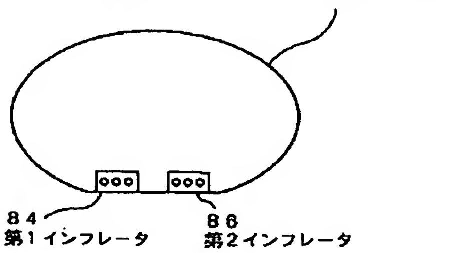
[Drawing 11]


(a)
44
W1
P
30a
ECU
52
54
50
56
48
Q
W2
(b)
52
54
30b
56
44
50
ECU
48

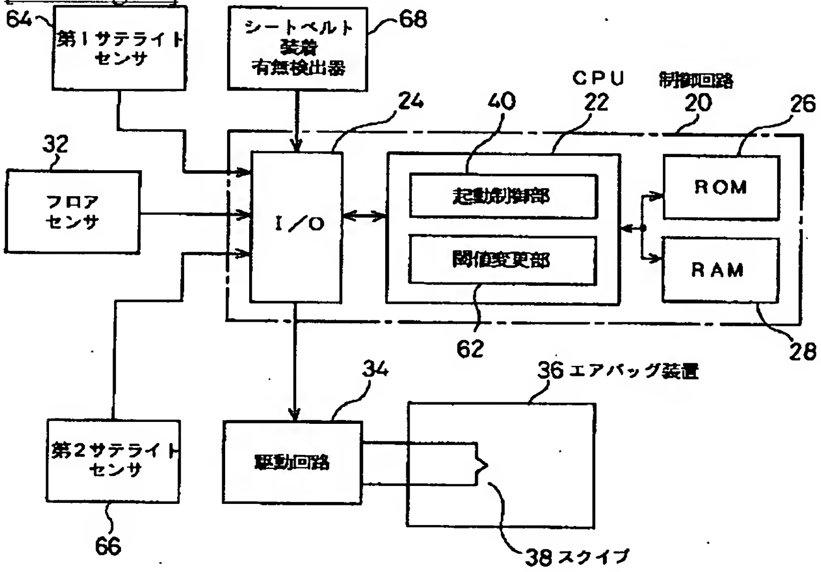
[Drawing 13]


フロア
センサ
32
G
40
演算部
58
f(G)
起動
判定部
60
A
T
閾値
変更部
62
第1サテライト
センサ
64
シートベルト
装着
有無検出器
68
第2サテライト
センサ
66

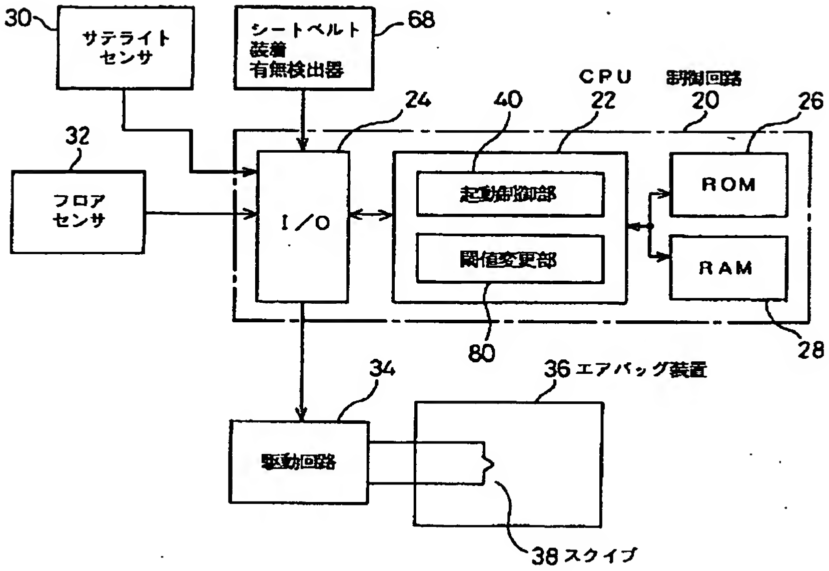
[Drawing 20]


88エアバッグ
84
第1インフレータ
86
第2インフレータ

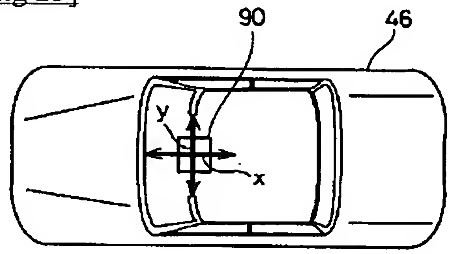
[Drawing 12]


64
第1サテライト
センサ
シートベルト
装着
有無検出器
68
CPU
制御回路
24
40
22
20
26
32
フロア
センサ
I／O
起動制御部
閾値変更部
ROM
RAM
62
28
34
36 エアバッグ装置
第2サテライト
センサ
駆動回路
66
38 スクイブ

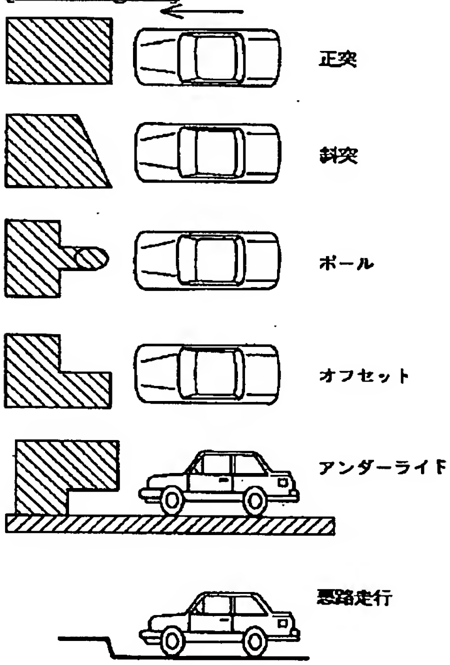
[Drawing 16]


30
サテライトセンサ
68
シートベルト装着有無検出器
32
フロアセンサ
24
40
CPU
22
制御回路
20
26
I/O
起動制御部
閾値変更部
ROM
RAM
80
28
34
36 エアバッグ装置
駆動回路
38 スクイブ

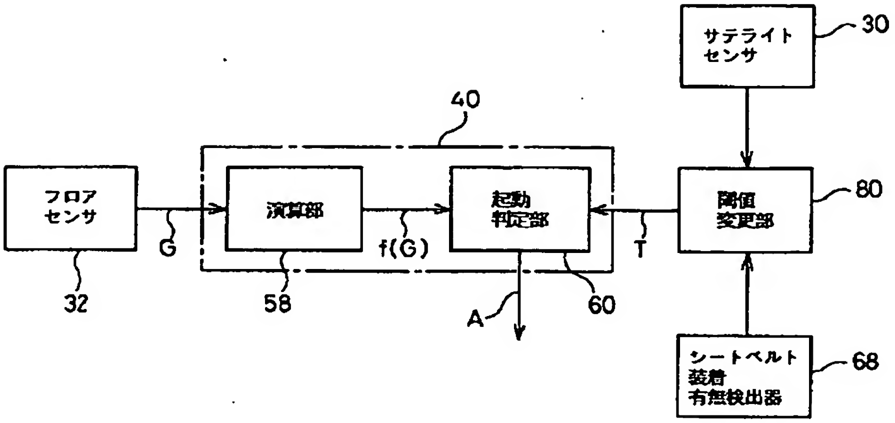
[Drawing 23]



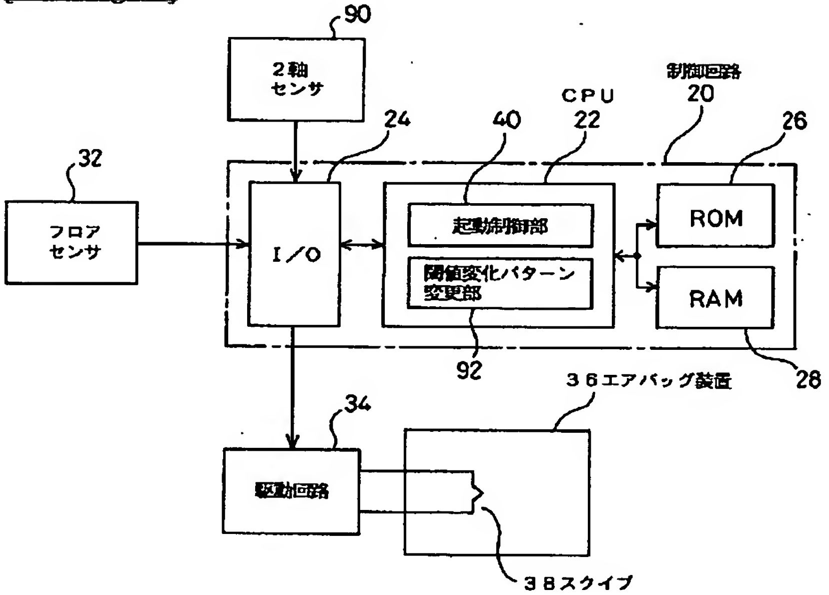
[Drawing 27]


正突
斜突
ポール
オフセット
アンダーライド
悪路走行

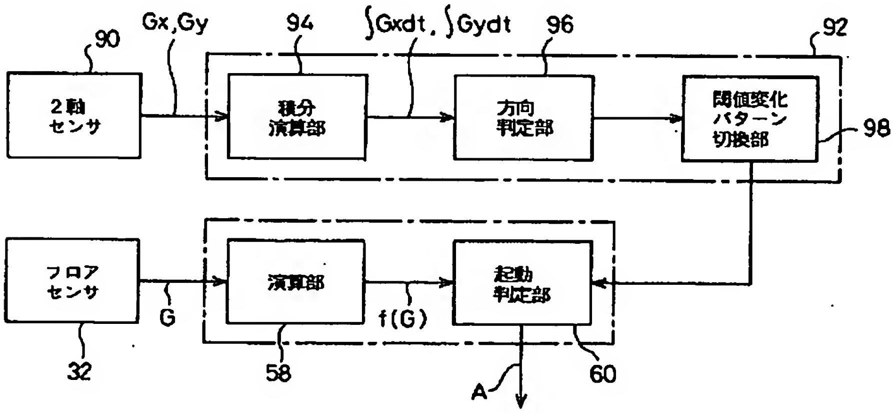
[Drawing 17]


30
サテライトセンサ
40
フロアセンサ
演算部
起動判定部
閾値変更部
80
G
f(G)
T
32
58
A
60
シートベルト装着有無検出器
68

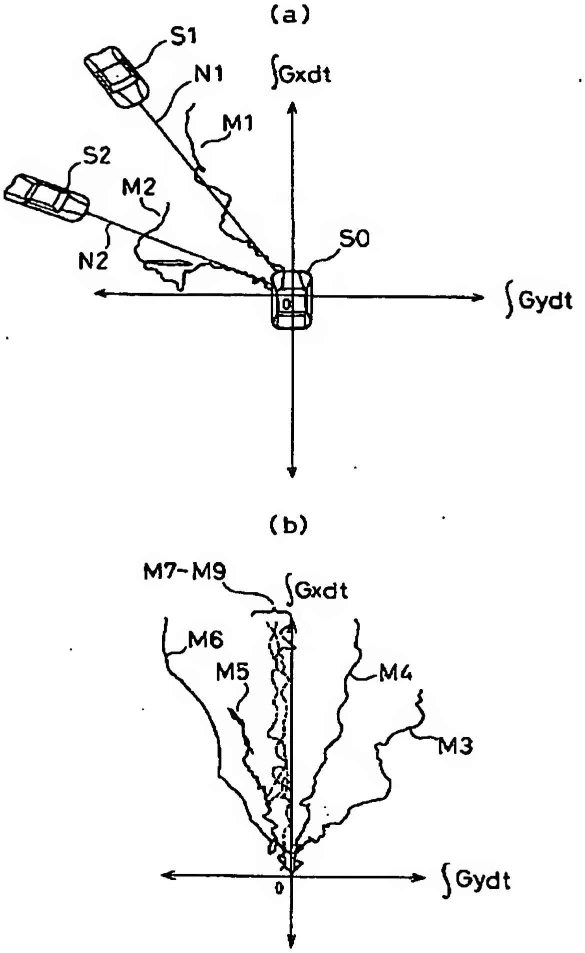
[Drawing 21]


90
2軸センサ
制御回路
20
CPU
22
24
40
26
32
フロアセンサ
I/O
起動制御部
閾値変化パターン変更部
ROM
RAM
92
36エアバッグ装置
28
34
駆動回路
38スクイブ

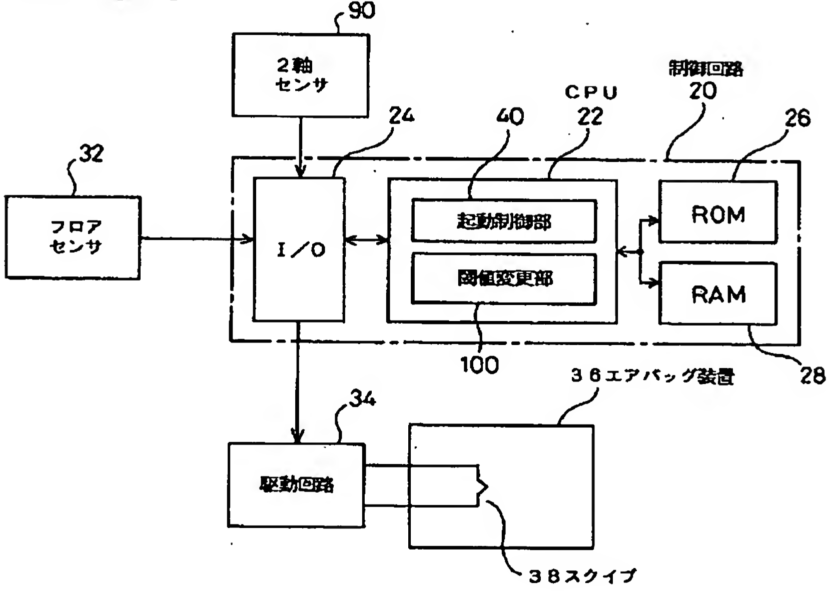
[Drawing 22]


90
Gx,Gy
94
∫Gxdt, ∫Gydt
96
92
2軸センサ
積分演算部
方向判定部
閾値変化パターン切換部
98
フロアセンサ
演算部
起動判定部
G
f(G)
32
58
A
60

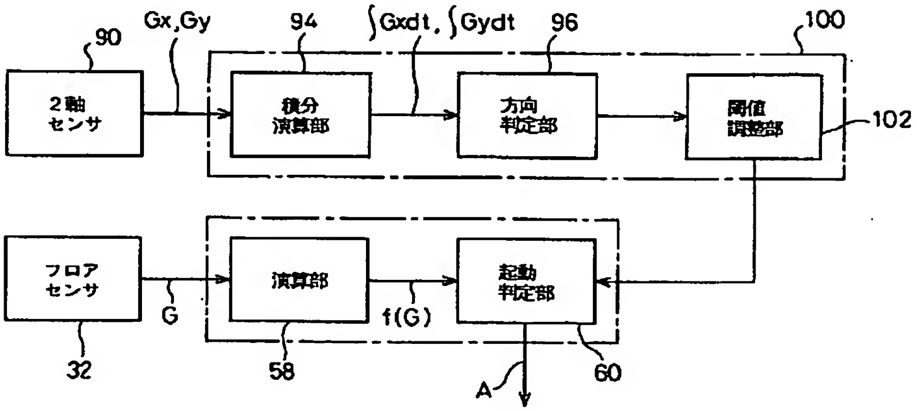
[Drawing 24]



[Drawing 25]


90
2軸センサ
32
フロアセンサ
24
I／O
40
CPU 22
制御回路 20
26
起動制御部
閾値変更部
ROM
RAM
100
28
34
駆動回路
36エアバッグ装置
38スクイブ

[Drawing 26]


90
2軸
センサ
Gx,Gy
94
積分
演算部
∫Gxdt, ∫Gydt
96
方向
判定部
100
閾値
調整部
102
フロア
センサ
32
G
演算部
58
f(G)
起動
判定部
60
A

[Translation done.]

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3.In the drawings, any words are not translated.

CORRECTION OR AMENDMENT

[Kind of official gazette] Printing of amendment by the convention of 2 of Article 17 of Patent Law
[Category partition] The 5th partition of the 2nd category
[Publication date] January 23, Heisei 13 (2001. 1.23)

[Publication No.] JP,10-152014,A
[Date of Publication] June 9, Heisei 10 (1998. 6.9)
[Annual volume number] Open patent official report 10-1521
[Application number] Japanese Patent Application No. 8-326180
[The 7th edition of International Patent Classification]

B60R 21/32

[FI]

B60R 21/32

[Procedure amendment]
[Filing Date] September 30, Heisei 11 (1999. 9.30)
[Procedure amendment 1]
[Document to be Amended] Description
[Item(s) to be Amended] Claim
[Method of Amendment] Modification
[Proposed Amendment]
[Claim(s)]
[Claim 1] It is a starting control unit for controlling starting of the occupant crash protection carried in the car,
An impact measurement means to measure the impact which is arranged in the position in said car and joins this car,
The starting control means which compares the value acquired based on the measured value by this impact measurement means with the threshold which changes according to a predetermined change pattern, and controls starting of said occupant crash protection based on the comparison result,
An impact detection means to detect whether it was ahead arranged rather than said impact measurement means in said car, and the impact beyond a predetermined reference value joined said car,
A threshold change pattern modification means to change the change pattern of said threshold into another change pattern when it is detected that the impact beyond said reference value was added with this impact detection means,
The starting control unit of preparation **************.
[Claim 2] In the starting control unit of occupant crash protection according to claim 1,
While the value from which plurality differs as said reference value is prepared and said impact detection means corresponds to each reference value, respectively, the impact beyond this corresponding reference value is equipped with two or more detection means to detect, respectively whether it joined said car,
Said threshold change pattern modification means,
The starting control unit of the occupant crash protection characterized by changing the change pattern of said threshold into another pattern with the detection means corresponding to a desired reference value among said two or more detection means when it is detected that the impact beyond this reference value was

added.
[Claim 3] When a car collides with a collision object, it is a starting control unit for controlling starting of the occupant crash protection carried in this car,
An impact measurement means to measure the impact which is arranged in the position in said car and joins this car,
The starting control means which compares with a predetermined threshold the value acquired based on the measured value by this impact measurement means, and controls starting of said occupant crash protection based on the comparison result,
An impact detection means to detect whether it was ahead arranged rather than said impact measurement means in said car, and the impact beyond a predetermined reference value joined said car,
A threshold modification means to change said threshold into another value when it is detected that the impact beyond said reference value was added with this impact detection means,
The starting control unit of preparation **************.
[Claim 4] In the starting control unit of occupant crash protection according to claim 3,
While the value from which plurality differs as said reference value is prepared and said impact detection means corresponds to each reference value, respectively, the impact beyond this corresponding reference value is equipped with two or more detection means to detect, respectively whether it joined said car,
Said threshold modification means,
The starting control unit of the occupant crash protection characterized by changing said threshold into another value with the detection means corresponding to a desired reference value among said two or more detection means when it is detected that the impact beyond this reference value was added.
[Claim 5] In the starting control unit of occupant crash protection according to claim 1 or 3,
Said reference value is the starting control unit of the occupant crash protection characterized by being set as a value bigger when the impact of extent which does not need to start said occupant crash protection joins said car by the collision by the predetermined collision gestalt than the value of the impact detected in the arrangement location of said impact detection means.
[Claim 6] It is the starting control unit of occupant crash protection according to claim 1 or 3,
A part of transfer path which transmits the detection result by said impact detection means from this impact detection means to said modification means is the starting control unit of the occupant crash protection characterized by two or more paths of a certain thing into said car.
[Claim 7] It is the starting control unit of occupant crash protection according to claim 1 or 3,
Said impact detection means is the starting control unit of the occupant crash protection characterized by arranging two or more places in said car.
[Claim 8] It is the starting control unit of occupant crash protection according to claim 1 or 3,
A part of transfer path which said impact detection means is arranged ahead [of said impact measurement means / the right slanting front and ahead / left slanting] in said car, respectively, and transmits the detection result by each impact detection means from each impact detection means to said modification means is the starting control unit of the occupant crash protection characterized by for there to be a path passing through the right-hand side in said car and a path passing through the left-hand side in said car for every impact detection means, respectively.
[Claim 9] When a car collides with a collision object, it is a starting control unit for controlling starting of the occupant crash protection carried in this car,
An impact measurement means to measure the impact which is arranged in the position in said car and joins this car,
The starting control means which compares the value acquired based on the measured value by this impact measurement means with the threshold which changes according to a predetermined change pattern, and controls starting of said occupant crash protection based on the comparison result,
A direction detection means of an impact to detect the direction of the impact which joins said car,
A threshold change pattern modification means to change the change pattern of said threshold into another change pattern when in agreement with the direction where said direction of an impact detected by this direction detection means of an impact was set up beforehand,
The starting control unit of preparation **************.
[Claim 10] When a car collides with a collision object, it is a starting control unit for controlling starting of the occupant crash protection carried in this car,
An impact measurement means to measure the impact which is arranged in the position in said car and joins this car,

The starting control means which compares with a predetermined threshold the value acquired based on the measured value by this impact measurement means, and controls starting of said occupant crash protection based on the comparison result,
A direction detection means of an impact to detect the direction of the impact which joins said car,
A threshold modification means to change said threshold into another value when in agreement with the direction where the direction detected by this direction detection means of an impact was set up beforehand,
The starting control unit of preparation **************.
[Claim 11] It is the starting control unit of occupant crash protection according to claim 9 or 10,
Said direction detection means of an impact,
The starting control unit of the occupant crash protection characterized by detecting said direction of an impact from the measured value of the impact which joins the cross direction of said car by said impact measurement means, and the value acquired based on the measured value of the impact which joins a longitudinal direction.
[Claim 12] When a car collides with a collision object, it is a starting control unit for controlling starting of the occupant crash protection carried in this car,
An impact measurement means to measure the impact which is arranged in the position in said car and joins this car,
The starting control means which compares the value acquired based on the measured value by this impact measurement means with the threshold which changes according to a predetermined change pattern, and controls starting of said occupant crash protection based on the comparison result,
A collision gestalt distinction means to distinguish the collision gestalt at the time of said car colliding,
A taking-a-seat condition detection means to detect crew's taking-a-seat condition in said car,
A threshold change pattern modification means to change the change pattern of said threshold into another change pattern when it is the collision gestalt as which said collision gestalt distinguished by said collision gestalt distinction means was determined beforehand and said taking-a-seat condition detected by said taking-a-seat condition detection means is in the taking-a-seat condition defined beforehand,
The starting control unit of preparation **************.
[Claim 13] When a car collides with a collision object, it is a starting control unit for controlling starting of the occupant crash protection carried in this car,
An impact measurement means to measure the impact which is arranged in the position in said car and joins this car,
The starting control means which compares with a predetermined threshold the value acquired based on the measured value by this impact measurement means, and controls starting of said occupant crash protection based on the comparison result,
A collision gestalt distinction means to distinguish the collision gestalt at the time of said car colliding,
A taking-a-seat condition detection means to detect crew's taking-a-seat condition in said car,
A threshold modification means to change said threshold into another value when it is the collision gestalt as which said collision gestalt distinguished by said collision gestalt distinction means was determined beforehand and said taking-a-seat condition detected by said taking-a-seat condition detection means is in the taking-a-seat condition defined beforehand,
The starting control unit of preparation **************.
[Claim 14] When a car collides with a collision object, it is a starting control unit for controlling starting of the occupant crash protection carried in this car,
An impact measurement means to measure the impact which is arranged in the position in said car and joins this car,
A speed detection means to detect the rate of the supposed body if not fixed in said car,
The starting control means which draws the change to said rate detected by said speed detection means of the value acquired based on the measured value by said impact measurement means, and controls starting of said occupant crash protection based on the derivation result,
The starting control unit of preparation **************.
[Claim 15] In the starting control unit of occupant crash protection according to claim 1 or 3,
While said impact measurement means measures deceleration as an impact which joins said car,
Said starting control means is the starting control unit of the occupant crash protection characterized by using the value which integrates with said measured deceleration once about time amount as a value acquired based on the measured value by said impact measurement means, and is acquired.
[Claim 16] In the starting control unit of occupant crash protection according to claim 1 or 3,

Said reference value is the starting control unit of the occupant crash protection characterized by being set as a value bigger when the impact of extent which does not need to start said occupant crash protection joins said car by right ** than the value of the impact detected in the arrangement location of said impact detection means.

[Claim 17] In the starting control unit of occupant crash protection according to claim 1 or 3,

Said reference value is the starting control unit of the occupant crash protection characterized by being set as a value bigger when said car is carrying out bad road transit than the value of the impact detected in the arrangement location of said impact detection means.

[Claim 18] In the starting control unit of occupant crash protection according to claim 1, 16, or 17,

The change pattern of said threshold used before it is detected that the impact beyond said reference value was added with said impact detection means when said threshold changes according to the predetermined change pattern to predetermined physical quantity,

The value acquired based on said measured value measured by said impact measurement means when the impact of extent which does not need to start said occupant crash protection joins said car by right **, The 1st one or more curves showing the change to said physical quantity, and/ Or the starting control unit of the occupant crash protection characterized by consisting of a specific line with a larger value than the 2nd one or more curves showing the change to said physical quantity of the value acquired based on said measured value measured by said impact measurement means when said car is carrying out bad road transit.

[Claim 19] In the starting control unit of occupant crash protection according to claim 18,

Said specific line is the starting control unit of the occupant crash protection characterized by being said 1st one or more curves and/or the envelope of said 2nd one or more curves.

[Claim 20] In the starting control unit of occupant crash protection according to claim 1, 16, 17, or 18,

The change pattern of said threshold used after it is detected that the impact beyond said reference value was added with said impact detection means when said threshold changes according to the predetermined change pattern to predetermined physical quantity,

The starting control unit of the occupant crash protection characterized by consisting of a specific line with a larger value than one or more curves showing the change to said physical quantity of the value acquired based on said measured value measured by said impact measurement means when the impact of extent which does not need to start said occupant crash protection joins said car by the predetermined collision of those other than right **.

[Claim 21] In the starting control unit of occupant crash protection according to claim 20,

Said specific line is the starting control unit of the occupant crash protection characterized by being the envelope of said one or more curves.

[Claim 22] In the starting control unit of the occupant crash protection of one publication of the arbitration of claim 18 thru/or the claims 21,

Said predetermined physical quantity is the starting control unit of the occupant crash protection characterized by being the rate of the body supposed when not fixed in said car.

[Claim 23] In the starting control unit of the occupant crash protection of one publication of the arbitration of claim 18 thru/or the claims 21,

Said predetermined physical quantity is the starting control unit of the occupant crash protection characterized by being time amount.

[Claim 24] In the starting control unit of occupant crash protection according to claim 3, 16, or 17,

Said threshold used before it is detected that the impact beyond said reference value was added with said impact detection means,

When the impact of extent which does not need to start said occupant crash protection joins said car by right ** The 1st value acquired based on said measured value measured by said impact measurement means at a certain event, and/ Or the starting control unit of the occupant crash protection characterized by being larger than the 2nd value acquired based on said measured value measured by said impact measurement means at a certain event when said car is carrying out bad road transit.

[Claim 25] In the starting control unit of occupant crash protection according to claim 24,

Said threshold is the starting control unit of the occupant crash protection characterized by being a value only with a larger predetermined value than said 1st value and/or said 2nd value.

[Claim 26] In the starting control unit of occupant crash protection according to claim 3, 16, 17, or 24,

Said threshold used after it is detected that the impact beyond said reference value was added with said impact detection means,

The starting control unit of the occupant crash protection characterized by being larger than the specific

value acquired based on said measured value measured by said impact measurement means at a certain event when the impact of extent which does not need to start said occupant crash protection joins said car by the predetermined collision of those other than right **.
[Claim 27] In the starting control unit of occupant crash protection according to claim 26,
Said threshold is the starting control unit of the occupant crash protection characterized by being a value only with a larger predetermined value than said specific value.
[Claim 28] In the starting control unit of occupant crash protection according to claim 1 or 3,
Said impact detection means,
The signal output terminal for outputting a detection result,
Diode by which the end is connected to this signal output terminal,
The 1st resistor by which the end is connected to the other end of this diode,
The internal switch switch on when the impact beyond said reference value joins said car while the end is connected to the other end of said diode and arranged at said 1st resistor and juxtaposition,
The 2nd resistor by which the end is connected to the other end of said 1st resistor and said internal switch, and the other end is connected to a ground,
The starting control unit of preparation **************.
[Claim 29] In the starting control unit of occupant crash protection according to claim 28,
Said impact detection means,
It has two or more of of said signal output terminals and said diodes, respectively,
While the end of each diode is connected to each signal output terminal, respectively,
The transfer path which transmits the detection result by said impact detection means from this impact detection means to said modification means is the starting control unit of the occupant crash protection characterized by having two or more signal lines connected to said signal output terminal, respectively.
[Claim 30] In the starting control unit of occupant crash protection according to claim 28,
Said impact detection means,
It has two or more of of said signal output terminals and said diodes, respectively,
While the end of each diode is connected to each signal output terminal, respectively,
Furthermore, it has one or more ground output terminals,
The transfer path which transmits the detection result by said impact detection means from this impact detection means to said modification means is the starting control unit of the occupant crash protection characterized by having two or more signal lines connected to each signal output terminal, respectively, and one or more earth wires connected to said ground output terminal.
[Procedure amendment 2]
[Document to be Amended] Description
[Item(s) to be Amended] 0102
[Method of Amendment] Modification
[Proposed Amendment]
[0102] In this example, by car collision, even if Q point of wire harness W2 was disconnected, an ON signal can be certainly transmitted to ECU through wire harness W1 by having formed wire harness into 2 line 44.
[Procedure amendment 3]
[Document to be Amended] Description
[Item(s) to be Amended] 0103
[Method of Amendment] Modification
[Proposed Amendment]
[0103] Moreover, since the electrical potential difference of Node P is not set to 0V even if the internal switch 50 turns on by having inserted the resistor 48 between the internal switch 50 and the ground, the electrical potential difference inputted into ECU44 is not set to 0V, either. On the other hand, when Q point of wire harness W2 short-circuits to a body ground by car collision, the electrical potential difference inputted into ECU44 is set to 0V. Therefore, in ECU44, since the case where the case where the internal switch 50 turns on, and wire harness short-circuit to a body ground with the value of the electrical potential difference inputted is certainly discriminable, the short circuit of wire harness is easily detectable.
[Procedure amendment 4]
[Document to be Amended] Description
[Item(s) to be Amended] 0104
[Method of Amendment] Modification
[Proposed Amendment]

[0104] Moreover, since the electrical potential difference of Node P is not set to 0V even if Q point of wire harness W2 short-circuits to a body ground by car collision by inserting two diodes 52 and 54 between wire harness W1 and W2, what the internal switch 50 turned on is certainly detectable.
[Procedure amendment 5]
[Document to be Amended] Description
[Item(s) to be Amended] 0113
[Method of Amendment] Modification
[Proposed Amendment]
[0113] In drawing 14, now, from the 1st satellite sensor 64, the ON signal should be inputted in time of day t6, and the ON signal should be inputted in time of day t5 from the 2nd satellite sensor 66. As mentioned above in with seat belt wearing, a threshold Th will be given to the starting judging section 60 according to the ON signal from the 1st satellite sensor 64. Therefore, value T four more fixed than the 1st satellite sensor 64 as a threshold Th till the time of day t6 when an ON signal is inputted is first given to the starting judging section 60. Next, at the time of day t6 when the ON signal was inputted, a threshold Th is changed into the value T6 lower than the value from the value T four till then. Then, the threshold Th is gradually enlarged after time of day t7.

[Translation done.]